1-16-2017 12:00 AM

The Influence of Transformational Leadership on Nurse-reported Patient Safety Outcomes

Sheila A. Boamah
The University of Western Ontario

Supervisor
Dr. Heather Laschinger
The University of Western Ontario Joint Supervisor
Dr. Carol Wong
The University of Western Ontario

Graduate Program in Nursing
A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

Abstract

Leadership is widely believed to be pivotal to providing high quality patient care and ensuring favourable organizational outcomes. To understand how nursing leadership affects patient outcomes, it is important to explore the mechanisms/ processes through which leaders produce desired patient outcomes. The purpose of this study was to examine how nurse manager use of transformational leadership behaviours creates empowering work environments that foster clinical leadership practices at the bedside, and ultimately, improve nurse and patient safety outcomes.

Bass's (1985) transformational leadership theory provided the theoretical framework for the research. Transformational leadership behaviour was hypothesized to have positive effects on workplace empowerment and staff nurse clinical leadership and, in turn, lead to job satisfaction and lower frequency of adverse patient outcomes.

A non-experimental cross-sectional design involving survey data was used to test the hypothesized model in a random sample of Registered Nurses (n = 1,000) working in acute care hospitals in Ontario, Canada. Participants received a mail survey package that included a letter of information, study questionnaire, pre-paid envelope and a link to an online survey option. To optimize response rates non-responders received a reminder letter four weeks after the initial mailing, followed by a second survey four weeks later. Descriptive statistics and scale reliabilities were analyzed. Using structural equation modeling with maximum likelihood estimation in Mplus, the final model fit the data acceptably: χ^2 = 959.309, df = 428, p = .001, CFI = .915, TLI = .908, RMSEA = .052, SRMR = .053. Transformational leadership was significantly associated with decreased adverse patient outcomes and

increased job satisfaction through structural empowerment and staff nurse clinical leadership behaviours.

The findings provided support for the theoretical relationships between transformational leadership and nurse and patient safety outcomes. The results of this research indicate that a more complete understanding of what drives desired patient outcomes may need to include a focus on how to empower nurses and foster clinical leadership practices at the point of care. By creating empowering work environments, transformational leaders are providing opportunities for nurses to discover innovative approaches to do their work, which could lead to higher levels of satisfaction and quality care.

These findings provide contributions to the burgeoning literature on transformational leadership and its influence on nursing work environment and patient safety outcomes. The evidence from this research supports extending transformational leadership theory to incorporate structural empowerment and clinical leadership as mediators in the relationship between transformational leadership and nurse and patient outcomes. Findings from the research can be used to create theory-based strategies to enhance professional development of managers and inform policies to transform the work environments of nurses.

Keywords: Transformational leadership, nurse managers, structural empowerment, quality and patient outcomes, staff nurse clinical leadership, job satisfaction, adverse events, retention

Dedication

This dissertation is dedicated in loving memory of my great grandmother,
Emma Botchwey, who always encouraged me to follow my dreams.
She continues to be an inspiration that nurtures all
that is good in my life.

Acknowledgments

First and above all, I praise my Lord and Savior, Jesus Christ, for providing me this opportunity and granting me the capability to proceed successfully. Throughout this doctoral journey, I have been blessed with care and support of the following people with whom I would like to express my profound gratitude:

I would like to extend my sincerest gratitude to my Supervisor, Dr. Heather Laschinger, for her expertise, support and for setting such high standards. Her gift for conceptualization, enduring encouragement, and practical advice has been an inestimable source of support for me during this process. Her untimely passing caused a great deal of heartbreak but it has become an inspiration to continue this strand of academic research. I am grateful for the personal time we shared and I will always remember the stories especially, the little life lessons on endurance and perseverance.

I extend a special thank you to my committee members, Dr. Carol Wong and Dr. Sean Clarke for providing insightful comments and encouragement throughout this process and especially, during the past few months. Carol, I truly appreciate how much you rallied behind me to ensure that this work reaches the finish line. Sean, thank you for being an invaluable friend and mentor over the years. I am most grateful to you.

I want to express my gratitude and deepest appreciation to the following agencies for their financial support: the Canadian Nurses Foundation, the Ontario Graduate Scholarship, the Nursing Leadership Network of Ontario, the Registered Nurses Association of Ontario, the Nursing Research Interest Group, the Nursing Health Services Research Unit, the Irene Nordwich Foundation, the University of Western Ontario, Western University Faculty of Health Sciences, and the Iota Omicron Chapter of Sigma Theta Tau International — thank you for believing in the value of this work. Special thanks go to all the Registered Nurses

who gave their time and shared their perspectives in the interest of enhancing our understanding of factors that influence healthcare service delivery.

My sincerest thanks goes to Dr. Isaac Luginaah for his support and guidance and for welcoming me to his lab and adopted me as one of his students and expected nothing less. A huge thank you to my mentor, Dr. Frederick Armah, for his encouragement, expertise and guidance over the course of my doctorate. Sincerest thanks to Drs. Fernando Olivera and Chris Higgins at the Richard Ivey School of Business, and Dr. Paul Trembaly in the Psychology Department for offering their personal time to share their wisdom in research and statistical analyses.

Cheers to my fellow colleagues in and outside of nursing for their moral support and encouragements. I acknowledge the past and present members of the HKL research team including Kevin Wood, Emily Read, Karen Cziraki, Fatmah Fallatah and Angela Law. Also, thanks to all the members at the Environmental Health and Hazards Laboratory for their camaraderie, assistance and immeasurable support. It is nearly impossible to acknowledge every one of you by name, but know that I truly appreciate you all. To my dearest friends and fellow PhD students, Rina Egbo, Aisha Aldawsari and Mengieng Ung, your love and support means the world.

Finally, I am blessed to have such an unconditional love and tremendous support of my lovely family. To my awesome parents, William and Betty, thank you for being great role models and sources of inspiration and demonstrating high values and strength. I am most grateful to my siblings, Genevieve and Ebo for their love and support. To the entire Boamah and Yamoah family, thank you for your prayers and for encouraging me to pursue my dream.

Table of Contents

List of Tables

List of Figures

List of Appendices

Chapter 1

Introduction

Patient safety is recognized as a global priority for healthcare organizations worldwide (World Health Organization, 2006), and is a key motivation for providing high quality care. Despite increased advocacy for patient safety, adverse events are still prevalent in hospitals (Forster, Dervin, Martin Jr., & Papp, 2012). To improve safety culture in healthcare organizations, evidence is needed to highlight how leadership may influence healthy work environments that foster positive nurse and patient outcomes. For this reason, this study aims to examine the impact of nurse manager leadership behaviours on nurse and patient safety outcomes in acute care hospital settings. This thesis commences with the background to the study including an overview of theory and research to support a proposed model linking transformational leadership to nurse and patient outcomes through its effects on workplace empowerment and clinical leadership behaviours.

Background of the Study

As a result of seminal reports such as *To Err is Human* (Kohn, Corrigan, & Donaldson, 1999) and *The Canadian Adverse Event Study* (Baker et al., 2004), patient safety has received considerable attention and emphasis has been placed on reducing the risks to which patients are exposed in healthcare settings. Studies indicate that alarmingly high rates of adverse events (i.e., medication errors, falls, and infections) in hospitals are a result of preventable incidents, some of which are likely due to nursing-related factors (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; IOM, 2004). Adverse events or outcomes are defined as unintended injuries or complications caused by healthcare

providers, resulting in harm, compromise or threat to patient safety (Baker et al., 2004). The Institute of Medicine (IOM) landmark report, *To Err is Human*, estimates that up to 98,000 patients die and more than 1 million are injured each year in the United States because of adverse events (Kohn et al., 1999). Equally alarming, the statistics from the Canadian Adverse Event Study in 2004 provided a comprehensive picture of patient safety in Canada, which showed that 7.5% of all hospitalizations in Canada had an adverse event and that approximately 9,250 to 23,750 deaths arising from these events were preventable (Baker et al., 2004). A more recent study by the Canadian Institute for Health Information (CIHI) estimates that in more than 138,000 hospitalizations in Canada in 2014-2015, about 30,000 — or one in every 18 patients suffered preventable harm that compromised their care (CIHI, 2016a). The dire statistics on adverse events is not limited to North America. For instance, in some European studies, it is estimated that adverse events occur in about 10-70% of all hospital admissions (Soop, Fryksmark, Köster, & Haglund, 2009; Vincent et al., 2008). The economic costs of adverse events are also significant and the burden in developed countries remains high. For instance, the cost of adverse events to the Canadian healthcare system was estimated at $1.1 billion in 2009-2010 (Etchells et al., 2012). Analogous costs have been reported in the US. The total annual cost of measurable medical errors in inpatient hospitals in the US was $985 million in 2008 and over $1 billion in 2009 (David, Gunnarsson, Waters, Horblyuk, & Kaplan, 2013).

Five years after the publication of the IOM report, Wachter (2004) identified five areas of patient safety (regulation, error reporting systems, information technology, malpractice systems, and training issues), and deemed progress to be insufficient,

suggesting that more work is needed to improve patient safety outcomes. A decade thereafter, patient safety remains an important public health challenge (Pronovost, Cleeman, Wright, & Srinivasan, 2016). Notwithstanding considerable resource allocation and effort to improve patient safety in healthcare organizations, the prevalence of adverse events in hospitals still remains high (Forster et al., 2012). There is limited evidence of substantial improvement made towards the creation of safety culture to improve patient outcomes (Forster et al., 2012; Landrigan et al., 2010; Pronovost et al., 2016).

In its 2004 report, *Keeping Patients Safe: Transforming the Work Environment*, the IOM summarized research indicating that nursing care was directly related to improved patient outcomes and identified numerous issues related to the nurses' work environment that appear to pose a threat to patient safety. Many of these issues include system factors, such as a lack of clear leadership and supervision, inadequate staffing levels, inadequate staff training, and equipment failures. In several other studies, similar concerns about the quality of the work environment have been reported (Aiken, Sloane, Bruyneel, Van den Heede, & Sermeus, 2013; Cummings et al., 2010; Laschinger & Leiter, 2006). Previous research suggests, "the greatest gains in improving patient safety will come from modifying the work environment of healthcare professionals, creating better defenses for averting [adverse events] and mitigating their effects" (Baker et al., 2004, p. 1685). Echoing this point, the IOM concluded that improving patient safety within healthcare organizations would require modification of the nursing work environments, adequate staffing levels, and in particular, strong leadership at all levels.

Creating and sustaining a healthy work environment that promotes patient safety will require fundamental changes at all levels of the organization including formal and

informal leadership (IOM, 2004). Due to their influence within the organization, nurse leaders have a pivotal role in the promotion of safety by shaping the practice environment to produce quality outcomes for nurses and patients (Shirey, 2006). In addition, leadership at the clinical level, defined as leadership practices enacted by staff nurses providing direct patient care (Patrick, Laschinger, Wong, & Finegan, 2011), has also been identified as critical to ensuring high quality patient care. Patrick, Laschinger, Wong, and Finegan (2011) found that staff nurse clinical leadership behaviours (i.e., effective communication and collaboration) were influenced by their perceptions of their managers' use of leadership practices, suggesting that leadership is important for ensuring safe patient care.

The common themes that continue to emerge from the safety literature are the need for effective nursing leadership and modification of the work environment to facilitate quality care and the need to encourage the reporting of adverse events. In particular, the IOM (2004) report suggested that transformational leadership behaviours of nurse managers lead to favourable nurse and patient outcomes. In nursing, positive relational leadership styles (i.e., transformational leadership) have been linked to reduced adverse nurse and patient outcomes (Cummings et al., 2010; Wong, Cummings, & Ducharme, 2013). However, the underlying processes and mechanisms by which leadership influences patient outcomes are not well understood (Cummings et al., 2010; Wong et al., 2013). Little is known about the causal mechanisms by which leadership influences employee behaviour and its subsequent effects on patient safety outcomes. To date, one of the biggest knowledge gaps is how strong leadership and workplace factors determine safety outcomes for patients and nurses. Further research is needed to

articulate the process by which nurse leaders exert their influence on desired nurse and patient outcomes. Thus, the goal of this research is to address this gap in the literature. A clear understanding of this process provides a necessary starting point for progress towards nurse managers fulfilling their potential as leaders in ensuring best possible outcomes for nurses and patients. This study aims to investigate the role of transformational leadership in creating empowering work environment that encourage clinical leadership at the bedside which may ultimately have a positive impact on nurse and patient outcomes.

Transformational leadership is a behaviour-based approach to obtain performance beyond basic expectations of workers and to strive for excellence (Bass & Avolio, 1994). The major premise of transformational leadership theory is that the leader inspires and motivates followers to meet their full potential (Avolio, 1999). Studies have shown that transformational leadership is key for creating supportive nurse practice environment and for building cohesive, adaptive work teams that ultimately lead to better nurse and patient outcomes (Cummings et al., 2010). Several authors (Gullo & Gerstle, 2004; Institute of Medicine, 2004; Zwingman-Bagley, 1999) have suggested that transformational leadership styles seem particularly relevant in current turbulent and stressful healthcare work environments. Transformational leadership is most effective in organizations facing uncertainty, and where leadership is needed to meet the demands and challenges of a changing environment (Bass, 1998; Gabel, 2013). Transformational leadership is an empowering leadership style that actively embraces and encourages innovation and change — ideally suited for today's dynamic healthcare environment. Nurse managers, who are a part of the healthcare team, require functional leadership skills in order to

motivate and transform subordinates and consequently, achieve organizational goals, including positive nurse and patient outcomes. Therefore, nurse managers constitute *a most-likely group* to which theories of transformational leadership can be applied.

In the nursing context, a number of new leadership studies have attempted to refine our understanding of transformational leadership using Kouzes and Posner's (1995) model of exemplary leadership. Influenced by Bass's (1985) transformational model of leadership, Kouzes and Posner described five exemplary leadership practices (challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart), which focuses on establishing a caring relationship between the leader and his/her followers (McNeese-Smith, 1995; Tourangeau & McGilton, 2004). Over the past three decades, a growing body of literature has been devoted to Bass's (1985) model of transformational and transactional leadership in a plethora of organizational settings (Judge & Piccolo, 2004; Lowe et al., 1996). Despite the popularity of transformational leadership in the management literature, a review of the nursing literature revealed few studies that have examined the effects of transformational leadership on nurse and patient outcomes; and the limited studies that exist do not explicate the mechanisms through which leadership influences these outcomes. In addition, there is less research testing the augmentation hypothesis forwarded by Bass — the notion that transformational leadership builds on transactional leadership styles, suggesting that transformational leadership adds to the effectiveness of transactional leadership to influence followers' satisfaction and performance (Bass, 1990).

This study focuses on Bass's (1985) leadership model as an approach to transformational leadership. Bass's model was employed for the following reasons. First, it is one of the most comprehensive models on leadership as it provides a strong integrated theoretical framework (transformational, transactional, and laissez-faire leadership). Second, this model has a good deal of support across cultures and a variety of settings, and has been consistently related to organizational and leadership effectiveness (Den Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999; Spreitzer, Perttula, & Xin, 2005).

Purpose of the Study

The purpose of this study is to test a hypothesized model integrating Bass's (1985) transformational leadership theory, Kanter's (1977, 1993) structural empowerment theory, and Patrick et al.'s (2011) construct of clinical leadership to evaluate the degree to which nurse managers' use of transformational and transactional leadership behaviours create empowering work environments that enable the clinical leadership behaviors of staff nurses, and subsequently, improve nurse job satisfaction and decrease frequency of nurse-assessed adverse patient outcomes.

Research Questions

The specific research questions that guide this research study are as follows:

1. What is the relationship between nurse manager's transactional leadership behaviours and staff nurses' perception of workplace empowerment?
2. What, if any, differences exist with respect to perceptions of empowerment when nurse managers use both transactional and transformational leadership?

3. How does empowering work conditions impact staff nurses' perceptions of their clinical leadership, job satisfaction, and occurrence of adverse events?

Significance of the Study

This research aims to advance our theoretical understanding of how transformational leadership influences key nurse and patient safety outcomes. Understanding factors that either facilitate or impede the successful delivery of quality care have significant relevance for healthcare leaders and key stakeholders to inform policy and practice relevant to healthcare services in Canada and globally. This understanding can serve to help hospital administrators and policymakers implement effective practices in order to create healthy work environments that are conducive to providing high quality patient care and improving the quality of worklife of nurses. The findings of this study may provide further support for transformational leadership theory and add to the growing body of empirical evidence showing connection between relational nursing leadership and patient outcomes. Transformational leadership theory has been widely adopted in nursing yet evidence on its efficacy in terms of clinical outcomes and workplace quality has been inconsistent (Hutchinson & Jackson, 2013), indicating that further studies are warranted. This study directs attention towards understanding how leadership may be enabled in those not in formally designated leadership positions — that is, clinical leadership at the staff nurse level. To our knowledge, this study is the first to examine how structural empowerment and staff nurse clinical leadership mediate the relationship between nurse manager transformational leadership, job satisfaction and occurrence of adverse events. This study is significant for nursing leadership and management because the results can potentially be used to create

theory-based and evidence-informed strategies to enhance the professional development of nurse managers, curriculum design of leadership and management courses and policy development.

Definition of Study Variables

To establish a clear level of understanding of the various components involved in this study, the following theoretical and operational definitions of the key terms are presented below.

Transformational leadership

Theoretical definition. Transformational leadership is a leader-follower relationship that inspires followers to perform at higher than expected levels (Bass, 1985). Transformational leadership consists of four dimensions:

Idealized influence (charisma) describes leaders who act as strong role models for their followers and instill within the follower characteristics such as pride, trust, and loyalty.

Inspirational motivation refers to the ability of the leader to communicate a shared vision and inspire the follower by creating a strong sense of purpose and aligning individual and organizational needs (Bass & Avolio, 1990).

Intellectual stimulation refers to leadership behaviour whereby the leader stimulates his/her followers to be creative and innovative in reasoning and problem solving.

Individualized consideration describes a leader who mentors and motivates followers on an individual basis.

Operational definition. In this study, transformational leadership was measured by the *Multifactor Leadership Questionnaire* (*MLQ-5X Short Rater form*), which was developed by Bass and Avolio (2000).

Transactional leadership

Theoretical definition. Transactional leadership is a leadership style characterized by behaviours of risk avoidance, operating within existing systems and maintenance of the status quo (Bass, 1997). It contains three dimensions:

Contingent reward involves providing subordinates rewards for effort and recognizing accomplishments.

Management-by-Exception-active refers to a dimension whereby the leader intervenes by exception, that is, he/she takes corrective actions when standards are not aligned with the task.

Management-by-Exception-passive occurs when the leader only gets involved after a problem has surfaced.

Operational definition. Transactional leadership was assessed using three subscales from the *MLQ-5X Short Rater Form* (Bass & Avolio, 2000).

Nurse manager

Nurse manager refers to a nurse who has been appointed to formal position of authority over staff nurses and is responsible for staff supervision and administrative duties within patient care units in a hospital.

Staff nurse

In this study, staff nurse refers to a registered nurse (RN) working in an acute care hospital setting in a direct patient care role and are not in administrative position.

Staff nurse clinical leadership

Theoretical definition. Staff nurse clinical leadership refers to leadership practices demonstrated by staff nurses providing direct patient care (Patrick et al., 2011).

Operational definition. The *Clinical Leadership Survey* (CLS) (Patrick et al., 2011) was used to measure the five subscales (challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart) of staff nurse clinical leadership.

Structural empowerment

Theoretical definition. Structural empowerment refers to having access to information, support, resources, and the opportunity to learn and grow. Access to these conditions enables employees to be efficient and accomplish their work effectively (Kanter, 1993, 1977).

Operational definition. Structural empowerment was assessed using the *Conditions of Work Effectiveness-II* (CWEQ-II) developed by Laschinger et al. (2001c).

Adverse events

Adverse events or outcomes are defined as unintended injuries or complications caused by health care management rather than by the patient's underlying disease process, resulting in disability at the time of discharge, prolonged hospital stay, or death (Baker et al., 2004).

Nurse-assessed adverse patient outcomes

Theoretical definition. In this study, nurse-assessed adverse patient outcomes are nurses' perceptions of the incidence of common adverse events in their units over the past year.

Operational definition. Nurse-assessed adverse patient outcomes were measured using the five items (patient falls, medication errors, pressure ulcers, hospital acquired infection, and complains from patients/ families) of an instrument created by Aiken et al. (2001).

Job satisfaction

Theoretical definition. Job satisfaction refers to the extent to which employees like or enjoy their jobs (Spector, 1997).

Operational definition. In this study, job satisfaction was assessed using the indicators from the *Global Job Satisfaction* (GJS) questionnaire (Hackman & Oldham, 1976).

Overview of the Thesis

This thesis consists of five chapters. In Chapter 1, an introduction and overview of the research study is provided including the background of the study, followed by the purpose statement and significance of the study. In addition, the key terms and major study variables are defined. In the following chapter, the theoretical framework of the study and a comprehensive review of the literature related to the major constructs of the study including transformational and transactional leadership theories, structural empowerment, staff nurse clinical leadership, nurse job satisfaction and nurse-assessed patient outcomes are presented. Chapter 3 deals with the research methodology, including the study design, data collection procedures, measures, and data analysis. The results of the statistical analysis are reported in Chapter 4. Finally, the thesis concludes with discussion and implications of the findings of the study in Chapter 5.

Chapter 2

Theoretical Framework and Review of the Literature

The purpose of this chapter is to critically evaluate theory and research assessing the leader-follower relationship from the transformational leadership perspective. In the first section of this chapter, Bass's transformational leadership theory (1985) is used as the broad theoretical framework to describe leadership behaviours. The second section deals a review of the empirical literature supporting the need for research into transformational leadership and the leader-follower relationship process. The conclusion of the chapter includes the hypothesized study model and subsequent hypotheses that have guided this research.

Conceptualization of Transformational Leadership

The theory of transformational leadership was initially described by James McGregor Burns (1978) who conceptualized leadership as an ongoing process by which "leaders and followers raise one another to higher levels of motivation and morality" (p. 20). Burns developed the theory of transformational leadership based on political leaders of the 1900s. According to his original conceptualization, Burns referred to opposite leadership behaviours: transactional leadership and transforming leadership. In this theory, transformational leadership is considered as a process whereby leaders persuade the followers to meet certain goals and, in turn, the followers persuade the leader to change his/her behaviour as leaders meet responsiveness or opposition (Burns, 1978). This process raises the level of aspirations of followers by appealing to their ideals and values and improves output. For Burns, follower behaviour was based upon reward for compliance (transaction) and/or the motivation to meet higher order needs

(transformation). These concepts of transaction and transformation were later expanded and refined by Bernard Bass and colleagues in their theory of transformational leadership, as they transferred the concepts from political contexts into organizational management (Avolio & Bass, 1988; Bass & Avolio, 1994). Bass's approach differs from Burns's model of leadership in two critical ways. First, Bass focused on leaders in the organizational realm as opposed to Burns who concentrated on leaders in the political arena. Secondly, for Bass, transformational and transactional leadership are complementary unlike Burns who considered them to be opposite constructs. Bass developed a more robust concept and model for organizational leaders suggesting that leaders can be both transformational and transactional. Bass conceptualized a 'full range' leadership model, which is composed of three components of leadership: transformational, transactional, and laissez-faire leadership.

Bass and Avolio's Full-range Leadership Theory

Within this full-range leadership model, transformational leadership stresses the importance of the leader's relationship with followers, which in part determines the performance and accomplishments of the group, unit, and organization (Bass, 1985; Bass, 1998). Transactional leadership behaviours provide the basis for the lower level needs (Maslow, 1954) of employees. A final category of leader behaviour in this model is the style of leadership, which avoids involvement, known as laissez-faire leadership. According to Bass (1990), effective leadership consists of only transformational and transactional approaches to leadership.

Transformational Leadership

The first component of leadership in the full-range leadership theory is transformational leadership, which is the main conceptual focus of this research study. Bass (1985) defined transformational leadership as a relational leadership style in which followers have trust and respect for the leader and are motivated to do more than is formally expected of them to achieve organizational goals. Transformational leadership is characterized by a mutually motivational relationship between leader and follower, which results in mutual stimulation and elevation that converts followers into leaders and leaders into moral agents (Burns, 1978). Transformational leadership theory consists of four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1985). Through the use of each of these dimensions, the transformational leader is able to motivate followers to do more than they thought they could or that they originally were committed to performing.

Idealized influence (charisma). The first dimension, idealized influence, also known as charismatic leadership, which is thought to be a central component of the transformational process, refers to leader attributes and behaviours that cause followers to identify with the leader. The leader is "idealized" and becomes the model of behaviour that encourages follower commitment and inspires followers to want to emulate him or her (Alimo-Metcalfe & Alban-Metcalfe, 2001). Leaders attain idealized influence by evoking feelings of trust, honesty, integrity, and respect in followers, who ultimately view them as role models. Serving as role models, these leaders instill confidence, admiration and trust in others and emphasize doing the right thing while emitting a strong sense of commitment to them. The leader enables followers to accomplish objectives that

they believe are too difficult. Transformational leaders who demonstrate idealized influence consistently set high standards of conduct as they project their self-confidence onto others. By demonstrating such confidence, followers willingly make self-sacrifices and attempt to achieve exceptional goals (Bass & Avolio, 1994).

Idealized influence is composed of two major interrelated components: idealized influence-attributed and idealized influence-behavioural (Bass, 1997). *Idealized influence – attributed* represents the highest level of transformational leadership. This factor attempts to conceptualize the attributes of trust and mutual respect between the leader and followers. *Idealized influence – behavioural* refers to behaviour that makes leaders role models. This is defined by the observations of the leader's behaviour that support the follower's trust and confidence in the leader. Leaders display their most important values and beliefs, emphasize the importance of having a sense of purpose and the moral and ethical consequences of decisions, and discuss the importance of trust among followers (Bass & Avolio, 1995).

Inspirational motivation. The second dimension, inspirational motivation reflects a leader's clear articulation of a compelling vision through words, symbols, and imagery (Bass, 1985) in order to inspire followers to act. Leaders motivate their followers inspirationally through the use of emotional appeals, sentiments and communicate enthusiastically about what needs to be accomplished and express confidence that goals will be achieved (Bass & Avolio, 1995). Transformational leaders inspire their followers by 'raising the bar' and encourage follower performance through the use of modeling hard work, storytelling and strong communication of the leadership vision and message (Alimo-Metcalfe & Alban-Metcalfe, 2001). In this dimension, working to create a shared

mission and vision for the organization is inspiring for followers as is the ability of the leader to remain optimistic during difficult times (Bass & Avolio, 1995). The leaders often set examples of hard work and utilize their creativity to heighten the creativity of their followers in order to lessen their workloads. Leaders who exhibit inspirational motivation "articulate, in simple ways, shared goals and mutual understanding of what is right and important" (Bass & Avolio, 1997, p. 28).

Intellectual stimulation. The third dimension, intellectual stimulation reflects the extent to which a leader solicits employees' perspective on problems and considers a wide variety of opinions in making decisions (Bass, 1985). Transformational leaders engage the followers' intellects by encouraging them to challenge the status quo and long-term assumptions. Leaders who engage followers in this manner encourage staff innovation and empower them to think critically and demonstrate new approaches to problem solving. The use of intellect, creativity and innovation is stressed as the leader encourages the use of logical reasoning and evidence rather than unsupported opinions in decision making and problem solving processes.

Individualized consideration. Lastly, leaders engaging in individualized consideration, the fourth dimension of transformational leadership, attend to the individual differences in the needs of their employees and seek to coach or mentor them in an effort to help them reach their full potential (Avolio, 1999). Leaders who practice individual consideration pay greater attention to individual employee through understanding, sharing followers' concerns, and support self-development among followers in order to empower them to reach new levels of achievement. Such leaders treat followers as unique individuals by providing personal attention, coaching,

mentoring, and growth opportunities that satisfy follower's needs for self-worth and self-actualization (Parry, Avolio, & Bass, 2003). Avolio (1999) stated that a key assumption of individualized consideration is that each employee has different needs, and that, for a specific employee, those needs will change over time partially based on the influence of the leader.

From the foregoing, transformational leaders set high standards for moral and ethical conduct, and make decisions that promote ethical policies, procedures, and processes within their organization (Avolio, 1999). These leaders focus often on long-term vision, one that will require large scale, versus incremental, change in the short term (Trott & Windsor, 1999). By using a transformational leadership style, a leader can successfully change the way things are by developing an appealing vision of the future, a vision that is strategically sound, clear, and inspirational (Eisenbach, Watson, & Pillai, 1999). In sum, transformational leaders evoke commitment and inspire the workforce.

Transactional Leadership

The second component of leadership in the full-range leadership theory is transactional leadership. Transactional leadership has been referred to as the more traditional leadership style because is generally based on bureaucracy and organizational standards. Transactional leadership describes the relationship between the leader and subordinate in terms of exchanges of economic, political, and psychological values. Bass (1985) defined transactional leadership as a process in which leaders expect followers to perform services in exchange for payment and fulfilling their demands. Transactional behaviours "emphasize on the transaction or exchange that takes place among leaders and followers… is based on the leader discussing… what is required… specifying the

conditions and rewards" (Avolio & Bass, 1994, p. 3). This style of leadership differs from the more emotionally charged relationships associated with transformational leadership. Transactional leadership consists of three components: contingent reward, management-by-exception active, and management-by-exception passive.

The first dimension, **contingent reward**, sometimes called contingent reinforcement, refers to an exchange of rewards between leaders and followers in which effort is rewarded by providing rewards (material or psychological) for good performance or disciplines for poor performance. Transactional leadership is mainly based on contingent positive or negative reinforcement. Positive reinforcement results from achieving the desired result. Negative reinforcement signals the need to stop the deficiency and modify the employee's behaviour. Sometimes the behaviour modification can be achieved through clarification of the task.

The second dimension is **management-by-exception active** where the leader watches and actively searches for deviations from rules and standards in order to avoid these deviations; if necessary, corrective actions are taken to ensure that standards are met. In the active context, the leader actively seeks opportunity to intervene and focuses their efforts on tracking mistakes and failures. The leader adheres to the established rules and regulations to avoid mistakes. Here, the leader follows the status quo with no attempt at improvement. This condition continues until performance target fail to be achieved. Consequently, this type of leadership stifles progression and fails to recognize preventable errors. The leader's reactive stance does not prepare the organization to take a proactive approach to growth.

The third and final dimension of transactional leadership is **management-by-exception passive** where the leader intervenes with his or her followers only when procedures and standards for accomplishing tasks are not met (Avolio, 1999). In contrast to the active manager-by-exception, this type of leader does not seek out deviations and only gets involved after the fact. In this passive environment, the leader waits for the process to fail before initiating any form of involvement in the leadership process. In the passive context, the leader remains idle until they are forced to act by either serious failures or requests to action is placed upon them.

In sum, transactional leadership style promotes a structured, bureaucratic environment whereby subordinates achieve work responsibilities through leader directed goals, tasks, and required performance levels. Transactional leadership involves setting up and defining agreements to accomplish goals, establishing standards, and communicating the compensation and reward processes. The leader promotes an understanding of the relation between organizational needs and wants, and links this to goal achievements. The transactional managerial processes achieve organizational goals by providing those who perform well with rewards such as pay increases, recognition, and employee achievements. The role of the transactional leader is important for accomplishing the day-to-day work of an organization (Avolio & Bass, 1988). The transactional leader's focus is on the organization's present status and to ensure that it continues to run efficiently. Transactional leaders act in conventional ways and give followers clarity about rules and standards to protect the status quo and entails closely monitoring and correcting followers' errors to ensure short-term success (Bass & Avolio, 1995; Bass, 1997). These leaders are reactive, meeting problems as they surface, as

opposed to being proactive and utilizing strategy in anticipating and planning future needs. While the transactional process provides for leadership direction, clarification of processes, and organization of resources, transactional leadership does not generally create significant amounts of enthusiasm or increase the subordinate's commitment to tasks.

Non-transactional Laissez-faire Leadership

The third component of leadership is laissez-faire leadership. Non-transactional laissez-faire leadership is the avoidance or absence of leadership where there are generally neither transactions nor agreements with followers. Laissez-faire managers avoid clarifying expectations, making decisions, abdicates responsibility, do not follow up, and refrain from intervening or addressing conflicts (Bass & Avolio, 1997, p. 36). This style of leadership is generally considered the most passive and ineffective form of leadership. Essentially, a laissez-faire leadership style is not only a lack of presence, but it implies not meeting the legitimate expectations of the subordinates and/ or superiors concerned.

In the preceding sub-sections, the three leadership behaviours (transformational, transactional, and laissez-faire) that constitute full-range leadership model are discussed. Bass and others assert that an appropriately balanced implementation of transformational and transactional approaches is central to a leader's overall effectiveness (Barling, Weber, & Kelloway, 1996; Judge & Piccolo, 2004; Lowe, Kroeck, & Sivasubramaniam, 1996). Both transformational and transactional leadership styles are needed for guiding an organization to success. Therefore, the leadership variable within this study is limited to the transformational and transactional leadership behaviours.

Transformational and Transactional Leadership

The distinction between transactional and transformational leadership has become of considerable importance to the study of leadership as researchers seek to understand how the characteristics of both leadership styles influence effectiveness in the workplace. The model of leadership selected for use in this study is the full-range leadership model developed by Bass. In the framework of the full-range leadership model, transactional and transformational leadership are viewed as complementary rather than polar constructs (Bass, 1990). Bass (1990) argues that every leader uses both transactional and transformational leadership to some extent, but the most effective leaders use transformational leadership more frequently than transactional leadership. According to Bass (1985), transformational leadership is a more powerful predictor of successful work outcomes, such as effectiveness and satisfaction than transactional leadership. Transactional leadership is the very structure of leadership that provides the basic tools required for effective management, as well as, the communication of directives to accomplish organizational goals (Bass & Avolio, 1990). Bass characterizes the transactional leader as operating within the existing structures and systems. Such a leader works most effectively in a stable and predictable environment, where promises are made for achievement and rewards for adequate performance are satisfactory reinforcement. In stable environments, leaders need to change very little; therefore, the status quo can be maintained through the transactional process (Bass, 1990, 1998).

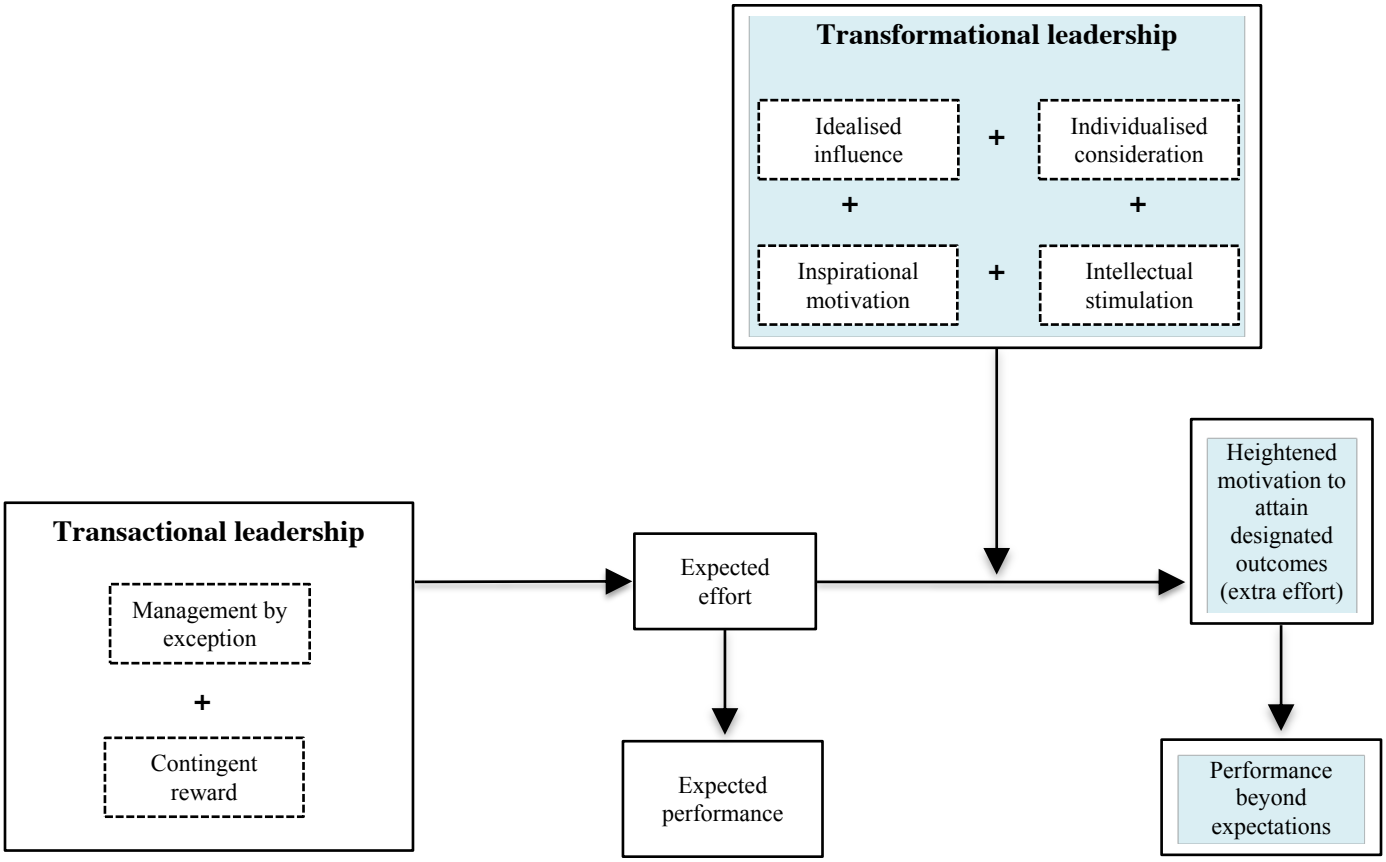
On the other hand, the transformational leader is characterized as a person who aspires to enlarge the scope of his/her employees through adequate leadership and to create an acceptance for the mission of the group (Bass, 1990). Transformational leaders

are most effective in unstructured and turbulent environments because such leaders promote innovation, new ideas and concepts, and a vision for the future (Bass, 1985; Gabel, 2013). The transformational leaders continually interact with their followers to create major changes. Thus, transformational leadership acts as a catalyst to improve organizational efficiencies and effectiveness.

Bass and Avolio's Augmentation Hypothesis

Bass theorizes that transformational leadership builds on transactional leadership and is difficult to imagine without it. In other words, transformational leadership is considered as "superior leadership performance" (Bass, 1990, p. 2); as the potentially more effective type of leadership. Bass (1998) emphasizes that "transformational leadership does not substitute for transactional leadership" (p. 21), but it augments transactional leadership in achieving the goals of the leader and organization. The augmentation effect essentially argues that transformational leadership adds to the base of transactional leadership, such that transformational leadership factors raise individuals to higher levels of motivation, effort, satisfaction, and performance more than what is capable with transactional leadership alone (Bass, 1990). The augmentation model suggests that effective organizations will primarily utilize transactional behaviour in accomplishing basic goals and objectives. However, if the organization seeks to reach beyond basic goals and objectives, transactional leadership should be supplemented with transformational leadership (Bass & Avolio, 1990). The augmentation effect of transformational leadership on transactional leadership is depicted Figure 1 below.

Figure 1. Avolio and Bass's (2004) Augmentation model of transformational and transactional leadership



Bass (1998) hypothesized that, in statistical terms, 'transformational leadership should account for unique variance in ratings of leader and follower performance (or other outcomes) over and above that accounted for by transactional leadership' (p. 10). Some studies have tested Bass's theory that augmentation of transactional leadership factors with the transformational leadership factors enhances follower's performance in different samples (Bass & Avolio, 1995; Bass, 1997; Bycio, Hackett, & Allen, 1995; Lowe et al., 1996). For example, in a sample of 1376 registered nurses, Bycio, Hackett, and Allen (1995) used hierarchical multiple regression to test the augmentation effect and

found that only contingent reward dimension of transactional leadership had positive relationship with subordinates' satisfaction with leadership (r = .56, p< .01), and subordinate-rated leader effectiveness (r = .42, p< .01). When transformational leadership factors were added as predictors to the transactional leadership scale in the regression model, a significant proportion of additional variance was accounted for in leader performance (R^2 = .84, p< .01), and satisfaction with leader (R^2 = .64, p< .01). In a similar study, Lowe, Kroeck, and Sivasubramaniam (1996) examined the augmentation effect through a meta-analysis of 39 studies (22 published and 17 unpublished studies) that analyzed transformational and transactional leadership constructs using the MLQ in various organizations including manufacturing, government, military, educational, and religious institutions. Results of the meta-analysis indicated differential magnitudes of the correlations between leader's style and organization's effectiveness. Consistent with the general findings in the leadership literature, transformational leadership scales (r = .71, r = .61, r = .60; p< .05) had stronger associations with work effectiveness than transactional scales (r = .41, r = .05; p< .05), with idealized influence correlating most highly with leader effectiveness, and management-by-exception having the lowest correlation with effectiveness. Furthermore, transformational leadership was more prevalent among middle level leaders in public organizations, whereas upper level leaders more often practiced transactional leadership, irrespective of their organization. These differences across levels may be attributed to the fact that by nature of their role, lower level leaders through their day-to-day interaction with followers have greater opportunity to effect work unit outcomes, whereas the functional duties of higher level leaders are

more oriented towards long-term policy, and therefore may have fewer opportunities to exhibit transformational behaviours frequently.

Using a meta-analytic approach, Judge and Piccolo (2004) also tested the validity of the augmentation effect of transformational on transactional leadership. Based on analysis of 626 correlations from 87 sources, the researchers related transformational, transactional, and laissez-faire leadership characteristics to work outcomes such as job satisfaction, follower motivation and organizational performance. The results revealed that transformational leadership significantly predicted three out of four of the leadership criteria: follower motivation ($\beta = .32$, $p < .01$), follower satisfaction with leader ($\beta = .52$, $p < .01$), and leader effectiveness ($\beta = .37$, $p < .01$). However, transformational leadership was not a significant predictor of leader job performance. Contingent reward leadership, on the other hand, significantly predicted each of the four leadership criteria including leader job performance ($\beta = .45$, $p < .01$). There was a strong significant association between transformational leadership and contingent reward dimension of transactional leadership ($r = .80$). All dimensions of transformational and contingent reward leadership had positive correlations with the three leadership criteria. Compared with transactional leadership, transformational leadership was more strongly correlated with follower satisfaction with leader ($r = .71$, $p < .01$) and leader effectiveness ($r = .64$, $p < .01$). On the other hand, contingent reward leadership was more strongly associated with follower job satisfaction ($r = .64$, $p < .05$), and leader job performance ($r = .45$, $p < .01$) compared with transformational leadership. Whereas transformational and contingent reward had strong positive relationships with various dimensions of the leadership criteria, laissez-faire

leadership rather had strong negative associations with follower satisfaction with the leader (r = -.58, p< .01) and leader effectiveness (r = -.54, p< .01).

In a more recent study, Higgins (2015) tested the augmentation hypothesis in a theoretical model linking the influence of nurse manager transformational leadership behaviour to staff nurse perceptions of supportive practice environments, organizational citizenship behaviours, patient safety culture, job satisfaction and objective measures of nurse sensitive outcomes. The sample consisted of 1,678 nurses across 136 inpatient units in seven hospitals in Ontario. Data were collected from administrative databases to ascertain whether hierarchical relationships exist at different levels (i.e., individual, group). For this reason, individual responses of the participants were aggregated to the unit/ ward level given that this is the unit of analysis. Results from the SEM analysis provided support for the hypothesized model: χ^2 = 40.72, CFI = 0.95, TLI = 0.91, RMSEA = 0.07. Transformational leadership (β = .38, p< .01) was a statistically significant and stronger predictor of supportive practice environments than transactional leadership. Transformational leadership was shown to have indirect effects on objectively measured patient outcomes. In particular, transformational leadership had a significant indirect effect on patient falls (β = -.08, p< .05) and hospital acquired infections (β = -.07, p< .05) through supportive practice environments and job satisfaction (β = -.08, p< .05). In addition, transformational leadership was found to have a negative indirect effect on medication errors (β = -.04, p< .05) through supportive practice environments. The findings did not provide support for the augmentation effect (β = -.004, p= .957). Transformational and transactional leadership were highly correlated (r = .79). While the author acknowledges the lack of evidence of moderation (augmentation effect), it is

likely due to the small sample size of 136 units, which is at a higher analytical scale. In the study, transformational leadership did not augment the effect of transactional leadership; however, the findings support the notion that transformational leaders influence patient safety outcomes through the leader's ability to create supportive practice environment, which enable staff to provide quality care for patients. Overall, the foregoing studies provide support for the augmentation hypothesis in that transformational leadership adds to the effectiveness of transactional leadership. In essence, transformational leadership produces higher levels of follower satisfaction that extends beyond the confines of transactional leadership.

Although the augmentation hypothesis has been tested in various studies (Bass, 1997; Judge & Piccolo, 2004; Lowe et al., 1996), relatively few studies have systematically examined the moderating influence of transformational leadership on transactional leadership (the augmentation hypothesis) to predict work-related outcomes in acute care hospital settings. This is a fundamental motivation for this present study. Testing of the augmentation effect will allow researchers to examine the overall validity of transformational leadership and potentially make critical refinements to the theory.

The augmentation theory is one of the core hypotheses underlying the full-range leadership model (Bass, 1997), and by acknowledging its theoretical importance, this study proposes that transformational leadership will have a positive moderator effect on transactional leadership. In this theoretical context, it is hypothesized that transformational leadership behaviour will have stronger positive effect on workplace empowerment and staff nurse clinical leadership than transactional leadership, which in turn, will increase nurse job satisfaction and decrease adverse patient outcomes.

Transactional and Transformational Leadership Research in Business

Transformational leadership is one of the most prevalent approaches to understanding individual, group and organizational effectiveness (Bass, 1985). A substantial body of research has examined the effect of transformational and transactional leadership behaviours on follower outcomes, including organizational commitment and satisfaction (Bass, 1998). Dimensions of transformational leadership as well as the contingent reward dimension of transactional leadership typically have favorable effects on followers. However, the transformational leadership behaviours have been more highly correlated with leader effectiveness and motivation of followers than transactional leadership.

In the business and organizational literature, transformational leadership has consistently been linked to employee attitudes and behaviours in a variety of settings across cultures (Judge & Piccolo, 2004; Walumbwa, Lawler, & Avolio, 2007). Work by Walumbwa et al. revealed positive relationships between transformational leadership and follower affective commitment in samples of Chinese, Indian, Kenyan and US bank employees (Walumbwa et al., 2007; Walumbwa, Orwa, Wang, & Lawler, 2005). Transformational leadership behaviour is frequently associated with higher levels of employee satisfaction (Walumbwa et al., 2005), organizational performance, follower work engagement (Zhu, Avolio, & Walumbwa, 2009), and employees' willingness to exert extra effort to reach a given goal. During the last two decades, the positive effects of transformational leadership have been described in hundreds of empirical studies and summarized in two key meta-analytic reviews (Judge & Piccolo, 2004; Lowe et al., 1996). In both reviews, transformational leadership emerged as a consistent and

significant predictor of work related attitudes and behaviours across organizational settings. Judge and Piccolo (2004) linked transformational leadership to higher follower satisfaction with leader, follower motivation, and rated leader effectiveness. Among the three dimensions of transactional leadership, contingent reward has been found to be the most effective in respect to its positive relationship with leader effectiveness and follower job satisfaction and motivation (Judge & Piccolo, 2004; Lowe et al., 1996).

Transactional and Transformational Leadership Research in Nursing

While sufficient evidence exists documenting the effects of Bass's transformational and transactional leadership on follower performance in various disciplines (DeGroot, Kiker, & Cross, 2000; Lowe et al., 1996), less is known about the underlying processes and mechanisms by which the effect of these leadership styles manifest in the nursing context. Transformational leadership appears in the nursing literature as a strategy for influencing successful organizational change (Cummings et al., 2010; Page, 2004). Theoretical and empirical studies have shown that transformational leaders improve the quality of patient care (Wong et al., 2013), deal with ethical issues (Cassidy & Koroll, 1994), and increase financial outcomes in organizations (Zwingman-Bagley, 1999). Within nursing, different models of transformational leadership have been associated with positive nurse and patient outcomes. For instance, Kouzes and Posner's model of transformational leadership practices has been related to staff expertise, higher nurse job satisfaction, commitment to the organizations, increased patient satisfaction, and reduced adverse patient events (Capuano, Bokovoy, Hitchings, & Houser, 2005; McNeese-Smith, 1995, 1999).

In nursing research, it appears that Bass and colleagues' model of transformational leadership is widespread. In a study of over 700 nurses from seven Canadian acute care hospitals, McCutcheon, Doran, Evans, Hall and Pringle (2009) found important relationships between Bass and Avolio's (1994) transformational leadership behaviours of nurse managers and job satisfaction. The researchers measured the full-range leadership styles (transformational, transactional, and laissez-faire), and results of multiple regression analysis revealed that the higher nurses rated their manager as having transformational and transactional leadership style, the higher the nurses' job satisfaction and the lower the unit turnover rate. More specifically, the contingent reward dimension of transactional leadership had a positive effect, while management-by-exception decreased nurses' job satisfaction. In addition, the result showed that transactional leadership behaviour of nurse managers increased patient satisfaction. As expected, laissez-faire leadership was found to have no effect on nurses' job satisfaction. Transformational leaders exert a significant positive impact on staff satisfaction by providing continued support and positive feedback, and by promoting open communication, which in turn, leads to improved outcomes (McCutcheon et al., 2009).

Bass's model of transformational leadership has been of great interest to many researchers in various contexts across different cultures. Studies support the notion that nurses who work with leaders exhibiting transformational leadership behaviours were satisfied with their jobs. For instance, in an Ethiopian study, Negussie and Demissie (2013) showed that all five dimensions of transformational leadership styles predicted nurse job satisfaction, and from transactional leadership, only contingent reward was significantly related to job satisfaction. Likewise, AbuAlRub and Alghamdi (2012)

concluded that transformational leadership contributes significantly to enhanced level of nurses' job satisfaction (r = .45, p< .001), while perceived transactional leadership style negatively influenced job satisfaction (r = -.14, p< .01) among Saudi nurses. More recently, Hayati, Charkhabi, and Naami (2014) found that transformational leadership has positive relationship with work engagement (r = .70, p< .01). Salanova, Lorente, Chambel, and Martínez (2011) added to these findings by showing that transformational leadership explains nurses' extra-role performance through self-efficacy (β = .13, p< .05) and work engagement (β = .17, p< .01) among Portuguese nurses. Nurses' perceptions of their managers' transformational and transactional leadership styles were positively correlated with leader effectiveness, satisfaction and extra efforts (Aboshaiqah, Hamdan-Mansour, Sherrod, Alkhaibary, & Alkhaibary, 2014). Avolio, Zhu, Koh, and Bhatia (2004) studied the impact of transformational leadership on staff nurses' organizational commitment in a public hospital in Singapore and concluded that there is a significant positive relation between these two variables. Likewise, in the US, Brewer et al. (2016) found that transformational leadership had direct positive effect on nurses' organizational commitment. Casida and Parker (2011) discovered positive relationships among transformational leadership, transactional leadership and the outcomes of leader's extra effort (r = .83; r = .29; respectively), leadership satisfaction (r = .82; r = .27; respectively) and effectiveness (r = .89; r = .28; respectively) in acute care hospitals. Results of multiple regression analysis indicated that both transformational and transactional leadership explained more than 67% of the effects on leadership outcomes; however, transformational leadership was a strong predictor of the outcome variables. This finding further supports the study by Morrison, Jones, and Fuller (1997), where

there was differential impact of transformational and transactional leadership on nurse job satisfaction (r = .64; r = .35; p< .01, respectively), with transformational leadership having stronger a positive effect on satisfaction than transactional leadership. Results of hierarchical regression showed a marked difference in the amounts of variance accounted for by transformational leadership in job satisfaction (30%) and transactional leadership (10%). This suggests that, with respect to job satisfaction, the impact of transformational leaders is far greater than that of transactional leadership alone.

The subsequent impact of transformational leadership on patient outcomes has also been identified in the literature. In a systematic review, Wong et al. (2013) reviewed studies that examine the relationship between nursing leadership and patient outcomes and found significant associations between positive nursing leadership behaviours or practices and increased patient satisfaction and reduced adverse events. For instance, they noted that Kouzes and Posner's (1995) transformational leadership practices were positively related to patient satisfaction (McNeese-Smith, 1999 in Wong et al., 2013). They also found that transactional leadership behaviours were associated with patient satisfaction (Doran et al., 2004 in Wong et al., 2013). Other studies included in the review, indicated that transformational leadership practices of nurse managers were significantly associated with reduced medication error, patient falls, hospital acquired infections and patient mortality (Capuano et al., 2005; Houser, 2003).

The literature continues to evolve regarding nurse manager's ability to transform the work environment, and the impact of that transformation on nurse and patient outcomes. Managers who use transformational leadership behaviours improve employee performance by encouraging good communication networks and enabling transmission

and sharing of informational (Bass & Avolio, 1990; McCutcheon et al., 2009). Within nursing, transformational leadership offers a tangible solution for creating empowering nursing work environments, and thus improving patient safety outcomes. However, few empirical studies have examined the relationship between Bass and Avolio's (1994) model of transformational leadership and workplace empowerment. No published literature testing the direct effect of transformational leadership on structural empowerment was found, and the limited studies that exist focus on transformational leadership and another concept of empowerment from a psychological perspective. For instance, a study by Morrison, Jones, and Fuller (1997) found that transformational leadership was positively related to employee empowerment, whereas transactional leadership had no effect on empowerment. The current study offered an opportunity to examine the effects of nurse manager transformational leadership behaviour on staff nurse structural empowerment, clinical leadership and ultimately, nurse and patient safety outcomes.

Based on the foregoing literature review, it seems logical to expect that nurse managers who demonstrate transformational leadership behaviours, as described by Bass and Avolio (1994), are likely to initiate change by creating access to the structures of empowerment that leads to enhanced organizational outcomes. Such leaders create a healthy work environment by empowering staff members to identify and solve problems using evidence-based practice (Raup, 2008). Managers who are transformational in nature will engage with their staff in pursuit of jointly held goals and facilitate nurses' access to structurally empowering factors necessary to accomplish their work in a more effective manner.

Structural Empowerment

Rosabeth Kanter (1993, 1977) conceptualized structural empowerment as the presence of social structures in the workplace that enable employees to accomplish their work effectively. According to Kanter, employee work behaviours and attitudes are shaped in response to work conditions and situations, rather than inherent personal characteristics. Hence, the structural aspects of the job are important in influencing effectiveness and success of an individual in the organization. Kanter argues that when employees have access to information, support, resources, and opportunity to learn and grow, the organization benefits in terms of improved employee attitudes and increased organizational effectiveness.

Access to *information* means having knowledge of organizational changes, decisions, policies, and goals; as well as having the required technical information and expertise necessary to complete a given job. Information provides a sense of purpose and meaning for employees, and enhances their ability to make decisions that contributes to organizational goals. Access to *support* involves receiving feedback and guidance, as well as emotional support from peers, subordinates, and superiors. Kanter (1993) suggests that support from others fosters group morale, and promotes behaviours that build cooperation rather than competition. The potential benefits this renders in productivity of the work unit include the promotion of collective efforts at problem solving and the creation of new, more efficient and more effective ways of completing sets of tasks. Support facilitates autonomous decision-making and innovation by minimizing the need for multiple layers of approval (Kanter,1979). Employees must have access to *resources*, including supplies, materials, equipment, money and time required to

accomplish organizational goals (Laschinger & Havens, 1996). Lastly, Kanter (1993) considers *opportunity* to be people's "expectations and future prospects" (p. 246); the potential for achievement and growth within the organization. Access to opportunity for mobility and growth entails access to challenges, rewards, increased status, recognition for competence and skills and professional development opportunities that increase one's knowledge and skills. Opportunity is exemplified by mobility between jobs in the hierarchical structure of the organization, as well as personal growth and learning experiences. Access to opportunity is considered to have an impact on self-esteem, commitment to the organization, competitive spirit, and change orientation. Kanter (1993) proposes that an individual's effectiveness on the job is influenced largely by organizational aspects of the work environment therefore, when employees have access to these working conditions, they are empowered to accomplish their work in meaningful ways.

Access to empowerment structures (i.e., information, resources, support, and opportunity) in the workplace allow staff nurses the ability to make decisions which affects processes of care, increases quality patient care and potentially improves patient outcomes. Empowering work environments provide a vital platform for ensuring high productivity and excellence in patient care delivery. Studies have found that empowering work environments supportive of professional nursing practice is associated with more positive outcomes for patients and nurses (Aiken et al., 2002; Tourangeau, Giovannetti, Tu, & Wood, 2002; Upenieks, 2003).

Numerous studies have been conducted to test Kanter's structural empowerment theory in a variety of nursing populations and settings. Studies on nurses have linked

structural empowerment to factors identified as important for retaining nurses, including high levels of job satisfaction (Cicolini, Comparcini, & Simonetti, 2014; Laschinger, Finegan, Shamian, & Wilk, 2004), work engagement (Boamah & Laschinger, 2014), organizational trust and commitment (Laschinger, Finegan, & Shamian, 2001a; Smith, Andrusyszyn, & Laschinger, 2010), and turnover intentions (Laschinger, 2012). Researchers have found that structural empowerment has an effect on other important nursing outcomes, such as, job autonomy and perceived control over nursing practice (Laschinger & Havens, 1996; Sabiston & Laschinger, 1995), and higher work effectiveness (Laschinger, Wong, McMahon, & Kaufmann, 1999). Workplace empowerment fosters autonomy, which leads to increased job satisfaction among clinical nurses (Kanter, 1993; Laschinger, Sabiston, & Kutszcher, 1997). In a large national survey of Canadian nurses, Laschinger, Shamian, and Thomson (2001b) found that when staff nurses have leaders who promote autonomy, show confidence in employees and encourage collaborative decision-making then nurses become more empowered. Staff nurses who perceive themselves to be empowered are more likely to enhance patient care through more effective work practices. Studies show that access to empowering work structures leads to nurses feeling a sense of control over their work. The perception of autonomy in their practice facilitates nurses' ability to coordinate care in a more effective and efficient manner (Greco, Laschinger, & Wong, 2006; Sabiston & Laschinger, 1995). Studies have found that when nurses feel supported in their professional practice, characterized by access to empowering working conditions by leadership, they are more likely to be motivated and give safe, quality care (Laschinger & Leiter, 2006; Spence Laschinger, 2008).

Benefits of empowering work conditions have been shown to increase patient satisfaction and also improve quality of care (Donahue, Piazza, Griffin, Dykes, & Fitzpatrick, 2008; Spence Laschinger, 2008). Purdy, Spence Laschinger, Finegan, Kerr, and Olivera (2010) tested a multi-level model to examine the impact of structural empowerment on patient and nurse outcomes. Results from the study showed a positive relationship between group-level structural empowerment and group processes, which in turn, was negatively related to risk-oriented patient outcomes (i.e., patient falls and nurse-assessed risk). In another study, Armstrong, Laschinger, and Wong (2009) found that an empowering work environment was positively related to perceptions of patient safety climate. A large body of knowledge reveals associations between structural empowerment and nurse outcomes such as job autonomy, perceived control over practice (Laschinger & Havens, 1996) and work engagement (Boamah & Laschinger, 2014), which subsequently affect work effectiveness (Laschinger et al., 1999). Therefore, structural empowerment may serve as a potential antecedent to clinical leadership. In addition, empowering work environments could be the mechanism through which staff nurse clinical leadership leads to reduce adverse events and increase job satisfaction. Thus, the proposed contribution of both direct and indirect effects of structural empowerment on these outcomes was examined in the present study.

Leadership and Structural Empowerment

Leadership plays an important role in creating structurally empowering work environments that foster positive nurse outcomes and high quality patient care. In the nursing literature, several leadership models have been used to examine the relationship between leadership and structural empowerment of nurses. For instance, the Leader

Member Exchange (LMX) model of leadership has been linked to empowerment of nurses. The LMX theory posits that the quality of the relationship between the leader and the follower (i.e., contribution, affect, professional respect, and loyalty) is critical to how employees respond to their work environments. When LMX quality is high, employees perform beyond expectations, thereby increasing productivity and work outcomes (Liden & Maslyn, 1998). A meta-analysis by Gerstner and Day (1997) showed that high LMX relationships resulted in greater access to resources (employee empowerment) while low LMX relationships were associated with restricted information and fewer resources — these outcomes are consistent with Kanter's concept of structural empowerment. Furthermore, in a study of 3156 nurses in 217 hospitals in Ontario, Laschinger, Finegan, and Wilk (2011) demonstrated that at the unit level, strong LMX quality had a significant direct effect on structural empowerment ($\beta = .25$, $p < .05$). At the individual level of analysis, Davies, Wong, and Laschinger (2011) found that LMX quality was significantly associated with structural empowerment ($r = .50$, $p < .001$).

Other studies have linked Avolio, Gardner, Walumbwa, Luthans, and May's (2004) theory of authentic leadership to acute care nurses' perception of structural empowerment. Wong and Laschinger (2013) showed that authentic leadership has a direct positive effect on structural empowerment ($\beta = .46$, $p < .001$), which in turn, leads to job satisfaction and increased performance. In addition, Laschinger, Wong, and Grau (2013a) found that authentic leadership behaviour of nurse managers negatively influenced emotional exhaustion and cynicism through empowerment in a sample of Ontario acute care experienced ($\beta = .41$, $p < .001$) and new graduate nurses ($\beta = .40$, $p < .001$). More recently, Boamah, Read, and Laschinger (2016) investigated the effects of

authentic leadership and structural empowerment on burnout, job satisfaction and patient care quality through the mediating roles of short-staffing and work-life interference. Results showed that new graduate nurses' perceptions of their manager's authentic leadership behaviour was significantly and positively related to structural empowerment (β = .63, p< .001), which in turn, decreased both short-staffing (β = -.32, p< .05) and work-life interference (β = -.30, p< .05). Consequently, these work-life factors (inadequate staffing and work-life imbalance) resulted in burnout, lower job satisfaction and lower patient care quality one year later.

Structural empowerment has been related to several other forms of positive leadership styles, including Conger and Kanungo (1988) and Hui's (1994) leader empowering behaviours (Greco et al., 2006; Laschinger et al., 1999), resonant leadership (Laschinger, Wong, Cummings, & Grau, 2013b), emotionally intelligent leadership (Young-Ritchie, Laschinger, & Wong, 2009), and Kouzes and Posner's transformational leadership practices (Patrick et al., 2011; Tourangeau, Cranley, Spence Laschinger, & Pachis, 2010). These study findings provide empirical support for the positive influence of leadership on structural empowerment in the workplace regardless of how leadership is conceptualized. Research in the area of empowerment has revealed that workplace empowerment is an important mediator in how leadership influences successful organizational outcomes. The impetus for improving nursing work environments is predicated on Kanter's notion that empowerment is an essential leadership strategy for creating effective workplaces. Empowering work environments create support for staff nurses to develop collegial partnerships and promote the continued professional growth of nurses and the use of clinical leadership behaviours at the bedside (Patrick et al.,

2011). This sense of empowerment enables nurses to practice according to their professional standards and therefore provide safe quality care for patients (Laschinger & Leiter, 2006).

Although a large body of research has linked positive nursing leadership practices to healthy work environments, there is limited research that explains the mechanism by which leadership influences clinical leadership behaviours of staff nurses. Therefore, in the current study it was expected that a nurse manager who demonstrates transformational leadership behaviour such as individualized consideration and intellectual stimulation would be more likely to create access to empowerment structures in the workplace that support the clinical leadership of staff nurses.

Staff Nurse Clinical Leadership (Leadership behaviours exhibited by staff nurses)

In the nursing literature, most of the empirical studies on leadership have generally focused on leadership behaviours of individuals in formal leadership positions (Cummings et al., 2008). Broadly, these behaviours have been referred to as 'clinical leadership', which term has been used loosely and widely to characterize leadership in formal perspectives. Although clinical leadership is well recognized in the nursing literature, the delineation of the meaning, structure, and function of the concept remains unclear (Chávez & Yoder, 2014). The concept of leadership at the staff nurse level is relatively new and several conceptualizations have emerged. From a theoretical perspective, Cook (1999, 2001) sought to investigate the attributes of a clinical leader and defined a clinical leader as 'a nurse directly involved in providing clinical care and improving care through influencing others' (p. 39). Lett (2002) expanded the boundaries of this definition by stating that a clinical leader is an expert nurse who through informal

leadership, empowers and leads others to promote high quality patient care. More recently, in a concept analysis, Chávez and Yoder (2015) suggested that staff nurse clinical leadership (SNCL) is "the process by which staff nurses exert influence over other individuals in the health care team…to accomplish shared clinical objectives" (p. 3).

In the nursing context, there has been little empirical research that has examined clinical leadership at the staff nurse level. To our knowledge, only one study (Patrick et al., 2011) has sought to conceptualize and empirically test a model of staff nurse clinical leadership, which examines how nurse managers' use of leadership practices creates empowering work environments that enable the clinical leadership behaviour of staff nurses. Patrick et al. (2011) defined clinical leadership as a process of leadership demonstrated by staff nurses providing direct patient care. Staff nurse clinical leaders are seen as positive clinical role models, empowered decision makers, clinically competent and effective communicators (Stanley, 2006). The attributes that shape a clinical leader include the use of clinical expertise and skills, assertiveness, collaboration, and coordination of care to promote the health and well-being of patients (Lett, 2002). Clinical leadership by staff nurses is essential in nursing practice as it improves the efficiency and sustenance of care processes that benefit the healthcare team and delivery of excellent patient care (Chávez & Yoder, 2014).

In Patrick et al.'s (2011) study, staff nurse clinical leadership was demonstrated through the enactment of the leadership practices described in the Kouzes and Posner's (1995) model of transformational leadership. Kouzes and Posner describe five fundamental practices of exemplary leadership that informed the categorization of core

behaviours associated with clinical leadership. The core practices of exemplary leadership resonate with clinical leadership attributes, such as clinical expertise, collaboration, coordination, interpersonal understanding and effective communication (Patrick et al., 2011). These five practices require leaders to: (1) Challenge the process, (2) Inspire a shared vision, (3) Enable others to act, (4) Model the way, and (5) Encourage the heart.

Challenge the process. Staff nurses who are clinical experts are able to challenge the process by questioning the status quo, seek out opportunities to change, think creatively, take initiatives and negotiate the best care for their patients. These informal leaders are willing to take risks to make things better for their patients and colleagues and find a process that they believe should be improved and fix it (Kouzes & Posner, 1995).

Inspire a shared vision. Clinical nurse leaders create compelling visions that guide people's behaviour. They inspire and empower colleagues to advocate for high quality patient care (Patrick et al., 2011). Clinical leaders are comfortable speaking openly and honestly with their peers. These leaders are strategic thinkers constantly absorbing and analyzing information and helping the team make better decisions (Rath & Conchie, 2008). They are approachable and their power and influence is based on being effective communicators, building and sustaining strong relationships, and always learning how the organization works (Kouzes & Posner, 1995).

Enable others to act. Staff nurse clinical leaders build trust with others, promote collaboration, and work effectively with people. They place a high value on teamwork and cooperation. Clinical leaders lead through relationship building, which is the essential glue that holds a team together (Rath & Conchie, 2008). Such leaders set the

example and provide guidance by mentoring and coaching, as well as offer opportunities for others to learn (Pielstick, 2000). Clinical leadership requires staff nurses to collaborate with colleagues and initiate input from other disciplines to achieve patient goals in a timely manner. By treating others with dignity and respect, clinical leaders create an environment of empowerment in which people feel good about their work and contributions.

Model the way. Staff nurses demonstrate clinical leadership by modeling the way and clearly articulating professional standards and values in their practice. These leaders set high standards and expectations, take accountability and positively support the professional development of others (Kouzes & Posner, 1995). Clinical leadership requires continuous effort by staff nurses to utilize their knowledge and skills and create standards of excellence to achieve patient care goals. They continuously share their knowledge and expertise with colleagues and patients. Clinical leaders set personal example by behaviours that demonstrate their values and philosophy.

Encourage the heart. As clinical leaders, staff nurses recognize individual contributions, provide ongoing encouragement and support to patient's efforts towards recovery, and ultimately improve patient outcomes (Patrick et al., 2011). They provide feedback for job well done, which heightens community spirit (Kouzes & Posner, 1995).

In addition to conceptualizing these five leadership behaviours of staff nurses, Patrick et al. (2011) developed a new measure of clinical leadership in a sample of 480 Registered Nurses working in direct patient care positions in Canadian hospitals. Results of a confirmatory factor analysis revealed a good fit of the model to the data (CFI = 0.96, TLI = 0.95, RMSEA = 0.05). Furthermore, Patrick et al. tested a model linking structural

empowerment to staff nurse clinical leadership in a structural equation modeling, and found that structural empowerment fully mediates the relationship between nurse manager leadership practices and staff nurse clinical leadership ($\beta = .29$, $p < .05$). In other words, nurse managers' transformational leadership practices create empowering work environments, which influence staff nurses' use of clinical leadership behaviours in their practice.

Consistent with Patrick et al.'s work, in this study, a staff nurse clinical leader refers to a registered nurse (RN) in a direct care position who influences and coordinates patient care processes with the healthcare team for the purpose of achieving positive patient outcomes. Clinical leaders advocate for patients and for their profession and share in decision-making with other members of the healthcare team to ensure quality and improve patient care outcomes. When working in an empowering environment, staff nurse clinical leaders build and develop their professional nursing competences (Chávez & Yoder, 2014). In essence, a staff nurse clinical leader is someone who supports and improves outcomes of care, ensures quality and reduces cost, integrates research into practice and is recognized as an advocate of best practice (Smith & Dabbs, 2007). From this perspective, it is expected that staff nurses who engage in clinical leadership behaviours according to Patrick et al.'s model of clinical leadership are more likely to provide safe quality patient care, and be satisfied in their jobs.

To date, there has been only one study of nursing work environments that specifically examined the role of structural empowerment on clinical leadership (Patrick et al., 2011). A fruitful next step was to examine the direct effect of empowering work environment on staff nurses' use of leader behaviours in their practice.

Nurse-assessed Adverse Patient Outcomes

Patient outcomes, in a healthcare context, refer to the consequences of care for patients. Ultimately, the primary concern of all nurses is the achievement of optimum patient outcomes. Patient outcome research has attributed most adverse patient outcomes to factors in the external environment and a lack of strong and visible leadership (Kohn et al., 1999). Adverse patient outcomes/events refer to any unintentional harm or complication (i.e., disability, prolonged hospital stay or death) arising from any aspect of healthcare management, rather than by the patient's underlying disease process (Baker et al., 2004). Studies have identified major problems within the Canadian healthcare system in the form of errors, concern with patient safety, workforce issues, and dissatisfaction with care despite the huge expenditure on healthcare (Baker et al., 2004). Numerous studies linking the quality of the nursing work environment and adverse patient outcomes have been conducted. These adverse events have included mortality, failure to rescue, medication errors, pressure ulcers, urinary tract infections, pneumonia, deep vein thrombosis, and increased length of stay (Aiken et al., 2002; Blegen, Goode, & Reed, 1998). In a five-country study of nursing work environments, Aiken et al. (2001) suggested that the poor working conditions are associated with nurse-assessed adverse patient events. Subsequent sub-analysis of Canadian nurses by Laschinger and Leiter (2006) yielded similar results.

Nursing researchers have identified multiple patient outcomes that appear particularly connected to nursing care (Maas, Johnson, & Moorhead, 1996). The IOM and the American Nurses Association have identified both medication errors and patient falls as key adverse events and important measures of nursing quality in the acute care

setting. In a study by Blegen, Goode, and Reed (1998), medication error rates and patient fall rates were found to be two adverse patient occurrences related to the quality of nursing care at the unit level. In the total sample of forty-two units, medication errors were positively correlated to patient falls and negatively correlated to patient acuity and all other events such as decubiti and nosocomial infection rates. For this reason, the rates of occurrence of medication errors and patient falls should be monitored within inpatient hospital settings.

In this study, nurse-assessed 'adverse patient outcomes or events' include patient falls, medication errors, hospital acquired infections, pressure ulcers, and patient and/or family complaints as perceived by nurses not from administrative or regulatory database sources. These adverse patient outcomes were selected because they are good indicators of quality nursing care (Lucero, Lake, & Aiken, 2010), and are based on the scope and domain of practising nurses (Aiken et al., 2002). Several studies (Aiken et al., 2001, 2013; Cina-Tschumi, Schubert, Kressig, De Geest, & Schwendimann, 2009; Sochalski, 2004) have used nurse-rated indicators of quality of care (i.e., medication errors, complaints from patients, pneumonia) as valid outcome measure. For instance, in a study of over 16,000 nurses in 396 US hospitals, McHugh and Stimpfel (2012) found that nurses' ratings of the quality of care delivered to patients on their units were significant predictors of 30-day mortality and failure to rescue, suggesting that the actual and nurse perceived evaluation of patient outcomes are entwined. Although conventional patient outcome measures and process indicators derived from clinical or administrative data are the most commonly used quality of care indicators, there are advantages that could be gained by asking nurses to report on quality (McHugh & Stimpfel, 2012). Nurse ratings

of quality of care provide related yet distinct information about patient outcomes because nurses are involved virtually at all points of patient care, which make their perspective a valuable source of information. While nurses' perceptions on the occurrence of adverse events were reported as a crude measure of risk in a five-country study by Giovannetti, Estabrooks, and Hesketh (2002), the investigators acknowledged that the nurses' views still served to reflect important trends and can be used as an indirect measure of patient care outcomes.

Nurses' perceptions of quality of care they provide has been associated with working conditions on their unit in several studies (Aiken et al., 2002; Giovannetti et al., 2002; Sochalski, 2004). The goal of the current study was to gain a fuller understanding of the mechanisms involved in creating satisfying work environments that foster high quality care. Access to empowering work structures leads to nurses' feeling of autonomy and perceived control over their work, which fosters nurses' use of clinical leadership at the bedside. Thus, it is logical to expect that if staff nurses engage in clinical leadership practices described in Kouzes and Posner's (1995) five leadership practices, they are more likely to have greater perceptions of patient care quality and job satisfaction.

Nurse Job Satisfaction

Job satisfaction is conceptually defined as 'the extent to which employees like or enjoy their jobs' (Spector, 1997, p. 2). Job satisfaction is a global attitudinal construct that involves several components, such as work or task, pay and benefits, status, coworkers, organization, and other psychological objects in the work environment (Taunton, Boyle, Woods, Hansen, & Bott, 1997). Despite the voluminous research that has been conducted on job satisfaction, high levels of job dissatisfaction among nurses

still persist (Hayes, Bonner, & Pryor, 2010; Lu, Barriball, Zhang, & While, 2012; Stamps, 1997). Job satisfaction is an important nursing outcome, which is affected by quality of the work environment. A growing body of research has linked the quality of nurse work environment and nurse job satisfaction (Laschinger et al., 2004; Laschinger, 2012). McNeese-Smith (1999) empirically tested the impact of managers' use of Kouzes & Posner's (1987) leadership behaviours to determine factors that created job satisfaction and dissatisfaction among acute care nurses. It was found that the characteristics of the work environment, pace, balanced workload, relations with coworkers, professional opportunities and the ability to meet patients' needs influenced nurse job satisfaction. In a meta-analysis of 48 studies on nurse job satisfaction, Blegen (1993) found that job satisfaction was positively correlated to work factors, such as, communication with peers, fairness and professionalism. Nurses' job satisfaction has consistently been shown to relate to professional autonomy, positive relationships with supervisors and co-workers, and organizational commitment (Laschinger, Finegan, Shamian, & Wilk, 2001d; Pineau Stam, Laschinger, Regan, & Wong, 2015). By contrast, lack of job satisfaction among nurses may influence turnover rate, staff burnout, absenteeism, and nursing shortage, issues which are growing in importance in the current workforce (Laschinger, 2012; Ulrich et al., 2010). Shields and Ward (2001) found that dissatisfied nurses were 65% more likely to have intentions to quit their jobs than those feeling satisfied. Aiken et al. (2001) found that with the exception of Germany, a high proportion of RNs working in hospitals in the United States (41%), Scotland (38%), England (36%), and Canada (33%) were dissatisfied with their jobs. Given that job dissatisfaction has been frequently identified as the reason why nurses leave their jobs, every effort is needed to improve

nurses' job satisfaction to promote retention of nurses and lessen the nursing workforce shortage.

Transformational leadership has been shown to reduce work pressures and raise employee morale, resulting in increased job satisfaction (Damayanthi, Wichaikhum, & Chontawan, 2014). Specifically, Bass and Avolio's model of transformational leadership has been linked to job satisfaction among registered nurses across nations and cultures. In the US, Bormann and Abrahamson (2014) found that transformational and transactional leadership styles of nurse managers were positively related to nurses overall job satisfaction. Mohammad, AL-Zeaud, and Batayneh (2011) showed a significant positive relationship among all five dimensions of transformational leadership and job satisfaction of nurses at Jordanian hospitals. Likewise, AbuAlRub and Alghamdi (2012) reported that nurses were more satisfied and intended to stay in their jobs when their leaders demonstrated transformational leadership styles. Research has shown that improving the job satisfaction of nurses is critical to meeting the challenges of quality outcomes, patient satisfaction, and retention of nurses in hospitals (Aiken et al., 2002; Cicolini et al., 2014; Hayes et al., 2010).

To date, less attention has been paid to the possible additional contribution of indirect effects or mechanisms by which transformational leadership leads to nurse job satisfaction. Thus, the current study offered an opportunity to examine structural empowerment factors and clinical leadership practices of staff nurses as possible mechanisms by which transformational leadership leads to nurse job satisfaction.

Summary of the Literature Review

From the review of the literature, there is evidence supporting the relationship between the leadership styles of nurse managers and nurse and patient outcomes. A variety of leadership models (i.e., LMX quality, authentic leadership, resonant leadership) have been used to study the effect of nursing leadership on organizational outcomes. In a synthesis of evidence, Cummings et al. (2010) reported distinctive patterns between relational-focused leadership styles (i.e., transformational and resonant leadership), and work outcomes, such as, nurse job satisfaction and organizational commitment. Transformational leadership styles have been shown to increase job satisfaction among nurses (Bormann & Abrahamson, 2014; Casida & Parker, 2011). One study (Patrick et al., 2011) established a link between Kouzes and Posner's model of transformational leadership and staff nurse clinical leadership behaviours through structural empowerment. A recent systematic review by Wong, Cummings, and Ducharme (2013) identified several studies that associated adverse patient outcomes with nursing leadership. The review showed relationships between relational leadership (i.e., transformational leadership) and the reduction of adverse events, specifically, medication errors. Other studies (Laschinger, 2014; Squires, Tourangeau, Spence Laschinger, & Doran, 2010) have demonstrated significant indirect association between resonant leadership and nurse (i.e., satisfaction) and patient (i.e., medication errors) outcomes.

Numerous studies (Cummings et al., 2010; Spence Laschinger, 2008; Wong et al., 2013) have shown that leadership plays an important role in influencing the work environment to improve nurse and patient safety outcomes. Aiken and colleagues have systematically linked the characteristics of the nursing work environment to adverse

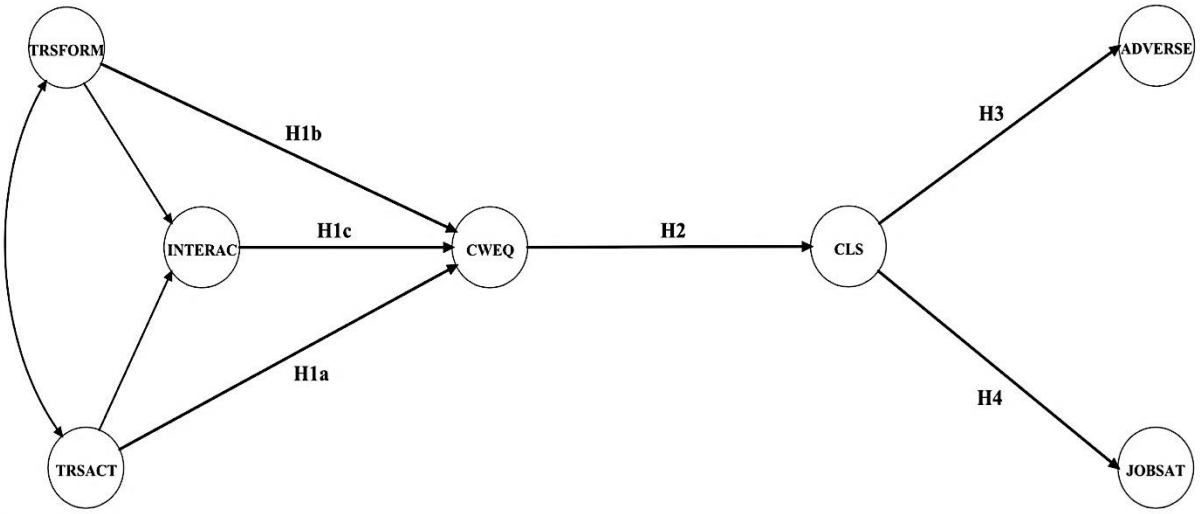
patient outcomes, such as medication errors, hospital infections, and falls. Similarly, Laschinger and others have consistently linked structural empowerment to positive nurse outcomes.

Through a large body of research conducted over the last decade, it is well acknowledged that strong nursing leadership is the driving force for creating healthy work environment that fosters positive nurse and patient outcomes. However, few empirical studies have been undertaken that clearly describe and identify the direct and indirect mechanisms by which leaders effect change in individuals and in patients outcomes. Furthermore, few studies have examined the combined effect of formal, as well as, informal leadership at the staff nurse level on nurse and patient outcomes. Therefore, the present study is designed to address this gap in the literature, and to examine the relationships among nurse managers' transformational leadership, structural empowerment, staff nurse clinical leadership, nurse job satisfaction and nurse-assessed adverse patient outcomes.

Hypothesized Model

Based on Bass's (1985) transformational leadership theory, Kanter's (1977, 1993) theory of structural empowerment, and the review of the literature, it is hypothesized that managers' use of transformational leadership behaviours positively influence manager transactional leadership, such that the joint leadership effect has a strong positive influence on structurally empowering work environments that facilitate staff nurse clinical leadership, which in turn, increases nurse job satisfaction and reduces the frequency of nurse-assessed adverse events. The hypothesized relationships are depicted in Figure 2a.

Figure 2a. Hypothesized model of transformational leadership and nurse and patient safety outcomes



Note: TRSACT (transactional leadership); TRSFORM (transformational leadership); CWEQ (structural empowerment); CLS (staff nurse clinical leadership; ADVERSE (nurse-assessed adverse patient outcomes); JOBSAT (job satisfaction); INTERAC (interaction term)

Based on this study model, the following hypotheses have been formulated:

Hypotheses

H_{1a}: Nurse managers' transactional leadership behaviour has a direct positive impact on structural empowerment.

H_{1b}: Nurse managers' transformational leadership behaviour has a direct positive effect on structural empowerment.

H_{1c}: Manager's transformational leadership behaviour positively moderates the relationship between transactional leadership and structural empowerment such that the relationship is stronger at higher levels of transformational leadership.

H_2: Structural empowerment is positively related to staff nurse clinical leadership.

H_3: Staff nurse clinical leadership is negatively related to nurse-assessed adverse patient outcomes.

H_4: Staff nurse clinical leadership is positively related to job satisfaction.

Rationale for Hypotheses

Bass (1990) proposes that the most effective leaders incorporate both transactional and transformational behaviours and influence subordinates to achieve the highest level of performance for their organization by focusing on the clarity of subordinates' roles and developing their understanding of the importance and values associated with desired outcomes. Bass argues that transactional leadership establishes the foundation for the relationship between the leader and follower through the day-to-day interactions, clarifying expectations, negotiating contracts and providing reward for performance. An effective transactional leader adheres to organizational policies and values and carries out the necessary management functions such as role clarification, task requirements, and provides rewards and punishments (Bass, 1997). These leaders focus on tasks, explain expectations and provide assistance to employees in exchange for their efforts in order to achieve expected performance targets. In doing so, transactional leaders create access to structural factors (i.e., support, information) necessary for employees to complete their job and to meet immediate short-term goals.

According to transformational leadership theory, transactional leadership provides a basis for effective leadership; however, a greater amount of effort, effectiveness and satisfaction is possible from employees by augmenting transactional with transformational leadership. The augmentation hypothesis suggests that transformational leadership builds on transactional leadership, such that transformational leadership

factors raise individuals to higher levels of motivation, effort, satisfaction, and performance more than the independent effect of transactional leadership (Bass, 1990). Transformational leaders make a significant difference in being able to effectively communicate their values and vision while also collaborating and encouraging involvement from the staff to reach their goals. These leaders are able to create positive workplaces by being visible, approachable and getting involved in activities on their unit. The visible presence allows the leader the capacity to effectively communicate with staff to see what they think and listen to their concerns regarding the workplace, and gather their perspectives on improving the issue. By demonstrating transformational leadership behaviours, it is expected that nurse managers will shape the climate of an organization to produce high quality patient and nurse outcomes. Transformational nurse managers produce better nurse and patient outcomes through the leader's ability to create empowering work environment by ensuring that staff nurses have access to structural factors (i.e., information, support, resources, and opportunities) necessary to accomplish their work. Work environments that are structurally empowering are likely to increase staff nurses' perceived control over their practice (Laschinger et al., 2004), enhance mutual respect, and inclusive decision-making (Laschinger et al., 1997). Through partnering efforts, sharing information and sharing power, the leader creates an atmosphere that encourages open communication, trust, and accountability (Upenieks, 2003). Such leaders make efforts to involve frontline nurses in the decision-making process. When nurses at the bedside share in decision-making authority in their work environments and are able to influence administrative decisions and policies, frontline leadership emerges.

With access to empowering working conditions (i.e., resources) by leadership, staff nurses are more likely to perceive themselves as clinical leaders in their practice (Patrick et al., 2011). These nurses are motivated to challenge the care process by questioning the status quo and seeking out opportunities to improve and negotiate the best possible care for their patients. Empowering work environments enable staff nurse clinical leaders to use their expertise, skills, and knowledge to influence their practice and provide quality care. When working in structurally empowering environments, nurses advocate for evidence-based practice, deliver more effective patient care (Murphy, 2005), and avoid unnecessary errors. Clinical leaders ensure that care delivery is safe and decisions are supported with evidence, and in doing so, they mitigate risks to patients by improving efficiency and coordination of care and advocate for optimal quality outcomes for patients. Using evidence to support practice decisions, it is reasonable to expect that staff nurse clinical leaders prevent adverse patient outcomes. In addition, when staff nurses work in empowering environments, they develop clinical leader behaviours, such as collaboration (Armstrong et al., 2009), coordination, and the development of effective nurse-physician communication (Manojlovich, 2005). In a collaborative work setting, staff nurse clinical leaders are highly autonomous and in general, experience more control and empowerment in the workplace. Feelings of autonomy and accountability promote trust, collaborative relationships and sense of community among staff. As a result, nurses are more likely to be satisfied with their job and have a desire to practice beyond expectations (Laschinger, Finegan, & Shamian, 2001c) to achieve the best outcomes of care.

Nurses' perceptions of their managers' leadership qualities and practices (i.e., transformational leadership) influence their own perceptions of structural empowerment, which ultimately has positive effect in nurses' use of clinical leadership behaviour. Given both the theoretical and empirical support for transformational leadership, managers who use transactional and transformational leadership behaviours would be more likely to create work environments that provide access to workplace empowerment structures that foster staff nurse clinical leadership, and in turn, improve nurse job satisfaction and a lower frequency of nurse-assessed adverse events.

Summary

In this chapter, a review of pertinent literature on transformational leadership and its relationship to organizational outcomes was provided. The theoretical foundation of the study was described and arguments presented to support the hypothesized relationships among transactional and transformational leadership and structural empowerment, and the effects on staff nurses' clinical leadership practices and ultimately, job satisfaction for nurses and quality care for patients. The mechanism by which transformational leadership behaviours of nurse managers influence nurse and patient outcomes was identified as a gap in the literature, which then served as a fundamental motivation for this study. In the succeeding chapter, the details of the methods used to test the hypothesized study model will be presented with the rationale for choosing the quantitative methodology to conduct the research.

Chapter 3

Methodology

In this chapter, the methodology, design of the study, the sample and the methods that were used to carry out the research are described. Sections deal with the research design, sampling design, data collection procedures, measures, data analysis, and ethical considerations. The selection of subjects, setting and sample size determination is described first, followed by a detailed description of the five instruments used in this study, including reliability and validity of the survey instruments. The procedures utilized to collect the data and data management strategies employed to assess data integrity and missing data are described next. Finally, the chapter concludes with a discussion of the tools used in the analysis of the data, and a summary of the overall methods for the study.

Research Philosophy

In this study, a quantitative approach was used to assess the effect of transformational leadership on nurse and patient safety outcomes. This research is rooted in postpositivist claims for developing knowledge and examining cause and effect relationships (Creswell, 2003) among the identified independent and dependent variables. In other words, the hypotheses that would be formulated to test the relationships among variables in this study can only be falsified, that is, reject or fail to reject the hypothesis. The quantitative approach was chosen for three key reasons. First, the researcher's philosophical assumption is that the relationships between variables in the study are objective, measurable and quantifiable. The second reason is that, in the extant literature, the nature of the relationship between transformational leadership and nurse and patient outcomes have been characterized in various ways, but relatively very few studies have

focused on the magnitude and directions of this relationship. Third, since the objectives of this study focus on testing existing theory and related hypotheses, quantitative methods are appropriate. By using a quantitative design and statistical data, the researcher seeks to provide support for the strength of the argument "particularly the soundness of its logic and the quality of its evidence" (Booth, Colomb, & Williams, 2003, p. 241).

Research Design

This study employed a cross-sectional, predictive, non-experimental design involving survey data to test the hypothesized model. Within this design, a mailed self-administered survey was used to provide access to a large sample of nurses across a large geographical region that might be difficult to reach by telephone or email. This survey approach has been shown to be cost-effective. The overall aim of the research study is to provide empirical support for the theoretical links among the constructs of the model — transformational and transactional leadership, structural empowerment, staff nurse clinical leadership, job satisfaction, and nurse-assessed adverse patient outcomes.

Sample and Setting

The study sample of Registered Nurses (RNs) was randomly drawn from the 2015 College of Nurses of Ontario (CNO) registration list. The sampling frame from this population consists of RNs who are registered with the CNO and agree to share their address for research purposes. A single stage random sampling was generated by CNO to create a mailing list for the study. Random sampling maximizes chances of obtaining a representative group, increasing the possibility of generalizing the study findings to others in similar roles and settings. RNs working in direct care positions in Ontario acute

care hospitals were selected to participate in this study. Nurses with direct patient care responsibilities represent the largest group of healthcare providers in acute care hospitals, and have the most contact with patients. The reason for this focus on acute care organizations is that it provides a naturalistic setting within the turbulent healthcare environment for examining leadership behaviours and a context in which multiple ratings of both leadership behaviour and outcomes are available. And finally, RNs working in specialty areas including medical, surgical, and critical care were selected because these practice settings are associated with increased risk of injuries/ adverse events (Hughes & Blegen, 2008).

Inclusion and Exclusion Criteria

Participants in this study were registered staff nurses employed full-time and part-time in staff direct care nursing positions in both teaching and non-teaching acute care hospitals in Ontario, Canada. According to the CNO (2015), there are approximately 59,666 (87%) RNs in direct care roles in acute care hospitals in Ontario. Nurses working in educator, charge, or manager positions and staff nurses new to their position (< 3 months) or are on leave of absence (> 1 year) were excluded. The exclusion of the latter group is based on the need to reduce recall bias, whereas new staff nurse were eliminated from the study because they are not deemed to have been on the unit long enough to have opportunity to encounter and make reliable observations of the leadership attributes of their current manager.

Sample Size Determination

Structural equation modeling (SEM) with maximum likelihood estimation was

used to test the fit between the data and the hypothesized study model in Mplus (version 7.3) (Muthén & Muthén, 2012). SEM is a statistical technique that uses the shared variance (i.e., covariances) between variables to estimate causal effects among variables (Hoyle, 2012). To test the proposed relationships using SEM, a large sample size is required. While there is no defined formula for sample size estimation in SEM (Schumacker & Lomax, 2004), a large sample, exceeding 200 subjects, is preferred to maintain the accuracy of estimates and to ensure representativeness (Kline, 2011; Schumacker & Lomax, 2004). Kline (2005) proposes that a sample less than 100 is considered small and this increases likelihood of error and limits the statistical power of tests. Therefore, to ensure adequate power, a minimum sample of 250 subjects is required. Kline recommends the ratio of the number of cases to the number of free parameters in the model should be 10:1 (including factor loadings, variances, covariances and structural paths) for a sufficient sample size. The model in this study consists of four second-order latent variables, 18 first order latent variables, and 68 manifest variables. Given the recommendation and the proposed model with 45 parameters, a minimum of 450 participants would be considered adequate for conducting SEM. However, to maximize representativeness of the sample, a 50% return rate is acceptable for survey designs (Polit & Beck, 2012). Previous nursing research using mail surveys of similar Ontario registered nurse samples support a response rate of approximately 50% (Armstrong et al., 2009; Greco et al., 2006; Smith et al., 2010). In order to achieve this desired return rate, it was calculated that double the minimum number (900) of participants needed to be surveyed (Polit & Beck, 2012). Furthermore, additional 10% of RNs was randomly selected from the CNO 2015 database to ensure an adequate size of

usable questionnaires (n = 1,000). The researcher has access to the CNO registration list of the previous year and, due to time lapse, anticipated a further loss of potential participants by approximately 10% due to lack of participation, change in home addresses, misplaced questionnaires and employment situations might occur. As a result, an overall maximum usable response rate of 40% was anticipated.

Data Collection Procedures

Following approval from the Western University Health Science Research Ethics Board (see Appendix A), data collection procedures were implemented. Derived from the CNO's registry list, the population of interest from which a random sample was drawn consisted of registered staff nurse employed in direct care positions in acute care hospitals in Ontario. Nurses who met the eligibility criteria received a survey package mailed to their home in February 2016 that included a letter of information explaining the study (see Appendix B), a questionnaire (see Appendix F), and self-addressed pre-paid return envelope. Respondents had two options of participating in this study either by completing a questionnaire booklet or an online survey. A modified version of the Total Design Methodology, strategies advocated by Dillman, Smyth, and Christian (2014) was used as a technique to improve survey response rates and to maximize return. Four weeks following the date of the initial mailing, a thank you/ reminder letter (see Appendix C) was mailed to non-respondents. Then, four weeks after reminder letters were sent, a final letter of reminder (see Appendix D), and replacement questionnaire with a return envelope were mailed to non-responders.

As a token of appreciation and an incentive to encourage participation, respondents were invited to enter a draw to win a prize of $100 gift card (2 prizes in total)

(see Appendix E). In line with previous research (see Deutskens, De Ruyter, Wetzels, & Oosterveld, 2004), monetary interests (i.e., gift cards, vouchers) increase response rates of surveys. To further increase response rates, a web-based survey was created using Qualtrics software. This was to provide nurses with greater control, flexibility and a convenient method to respond to the survey. Online data collection strategies are quite flexible and dramatically decrease response times (Granello & Wheaton, 2004; Lazar & Preece, 1999), and reduce turnaround time (2 to 3 days), as compared to typical turnaround time for traditional mail surveys (4 to 6 weeks) (Farmer, as cited in Duffy, 2002). To ensure that appropriate individuals respond to the online survey, respondents were provided with a web address (URL), unique user PIN (personal identification number), and quick response 'QR code' on the survey booklet to gain access to the online survey. Each participant was assigned a unique identification number to maintain anonymity of the participants. The unique PIN was used to track completed and returned surveys to initiate the follow-up of nurses who did not return their questionnaires. A codebook was created to include copies of the original data set and the cleaned data set as well as copies of the basic descriptive, correlation, regression analyses, syntax, output, and notes to document the analysis.

Measures

All measures chosen for this study are standardized questionnaires with acceptable psychometric properties and demonstrate construct validity (Aiken et al., 2001; Bass & Avolio, 1994; Laschinger et al., 2001c; Patrick et al., 2011). Closed-ended questionnaire (Likert) formats were selected for this study because this type of survey enables respondents to answer sensitive questions honestly, without fear of disclosing

personal or specific details and also, Likert-type format enable coding and data analysis to be much simpler than open-ended questionnaire coding (Polit & Beck, 2012).

The self-administered survey consists of six valid and reliable instruments, which measure the concepts of interest. Written permission (see Appendix G) was obtained from the copyright holders to use these instruments in this study. Copies of the instruments are provided in Appendix F. It is estimated that each survey package would take approximately 15-20 minutes to complete. In total, there are 68 items, most requiring similar ordinal scoring responses (Likert-like scales). Refer to Table 1 for a summary of the major study variables and respective measurement.

Table 1

Summary of Variables and Instruments of Measurement

Variables	Instrument	# of Items	Scale Range
Independent Variables			
Exogenous variables			
Transformational leadership	Multifactor Leadership Questionnaire (MLQ) – Rater Form (Avolio & Bass, 2004)	20	0-4
Transactional leadership	Multifactor Leadership Questionnaire (MLQ) – Rater Form (Avolio & Bass, 2004)	12	0-4
Endogenous variables			
Structural empowerment	Conditions of Work Effectiveness-II (Laschinger et al., 2001c)	12	1-5
Staff nurse clinical leadership	Clinical Leadership Survey (CLS) (Patrick et al., 2011)	15	1-5
Dependent Variables			
Endogenous variables			
Job satisfaction	Global Job Satisfaction Questionnaire (GJSQ) – Adapted from Hickman & Oldham, 1975	4	1-5
Nurse-assessed adverse patient outcomes	Nurse-assessed Adverse Event (Aiken et al., 2001)	5	1-4

Transformational/ Transactional Leadership

The *Multifactor Leadership Questionnaire* (MLQ) is an instrument originally developed by Bass in 1985 to measure transactional, transformational, and laissez-faire leadership styles. The MLQ has undergone several revisions and rigorous psychometric testing. The updated version, the *MLQ-5X Short Rater Form* (Bass & Avolio, 2000), was used in this study to measure nurses' perceptions of their manager's transformational and transactional leadership. The MLQ-5X is a well-established questionnaire consisting of 45 items, of which 32 items assess transformational and transactional leadership behaviours and outcomes using a five point Likert scale ranging from "0 = not at all, 1 = once in a while, 2 = sometimes, 3 = fairly often, to 4 = frequently, if not always" (Bass & Avolio, 2000, p. 31). The classic form of the MLQ-5X is comprised of 12 main factors — nine of which focus on transformational, transactional, and laissez-faire leadership styles and three factors which look at leadership outcomes including extra effort, effectiveness and satisfaction. Transformational and transactional leadership behaviours have a total of eight factors, and an additional scale, which measures the Laissez-faire leadership style (Bass & Avolio, 2000). According to Bass (1985), effective leadership consists of only transformational and transactional leadership characteristics; therefore, this study specifically focuses on the eight factors of transformational and transactional leadership behaviours. Five of these factors are defined as transformational leadership behaviours including: (1) idealized influence-attributes, (2) idealized influence-behaviours, (3) inspirational motivation, (4) intellectual stimulation, and (5) individualized consideration. Three factors of the MLQ-5X relate to transactional leadership behaviours including: (1) contingent reward, (2) management-by-exception-active and (3) management-by-

exception-passive (Bass & Avolio, 2000). In total, there are 32 questions affiliated with the two (transformational and transactional) leadership styles. The questions are evenly distributed with four questions asked relative to each of the eight dimensions of transformational and transactional leadership behaviours. The items of each subdimension of the two leadership styles are illustrated in Table 2.

Table 2

Items of Each Subdimension of MLQ-5X Short Form Scales and Description

Leadership factors (dimension)	Items	Description
Transformational leadership		
Idealized influence-attributes	8, 16, 19, 23	Leader develops a collective sense of mission and values
Idealized influence-behavioural	5, 12, 21, 30	Leader builds trust and confidence through personal association
Inspirational motivation	7, 11, 24, 32	Leader creates a collective vision
Intellectual stimulation	2, 6, 27, 29	Leader encourages innovation through examination and analysis of critical assumptions
Individualized consideration	13, 17, 26, 28	Leader teaches and coaches on an individual basis
Transactional leadership		
Contingent reward	1, 9, 14, 31	Leader provides meaningful rewards based upon task completion
Management-by-exception-active	4, 20, 22, 25	Leader seeks deviation from expectations and provides punishment
Management-by-exception-passive	3, 10, 15, 18	Leader reacts to situations after they become serious

Note. From "Multifactor Leadership Questionnaire," by B. Bass & B. Avolio, 1995, Copyright by Bass & Avolio. Reprinted with permission. # = number of items in question (Appendix F)

Instrument Validity and Reliability. The MLQ-5X is the most validated measure of transactional and transformational leadership (Özaralli, 2003, p. 338). The MLQ-5X was chosen for this study because it is substantiated by rigorous research,

psychometrically sound, easy to use, and it is based on the full-range leadership theory. The MLQ-5X is the most widely used instrument for establishing leadership style (Antonakis, Avolio, & Sivasubramaniam, 2003), and has high construct validity. Construct validity refers to the degree to which a test measures the construct it intends to measure (Lönnqvist & Hannula, 2000). Although the MLQ-5X is widely used, it has been criticized for having inadequate discriminant validity among factors that tap the constructs. Due to the high correlations and the lack of discriminant validity of the transformational scales, several researchers (Bass & Riggio, 2006; Bycio et al., 1995; Lowe et al., 1996) have challenged the theoretical underlying construct of the five-factor model. Avolio and Bass (2004) have supported the validity of the measurement model and factor structure of the latest version of the MLQ-5X using confirmatory factor analysis (CFA). The results of the CFA at the item level demonstrated that the nine-factor model (transformational, transactional and laissez-faire leadership style) of the MLQ-5X is successful in capturing the full leadership factor constructs of transformational leadership theory. The Root Mean Square Error of Approximation (RMSEA) value of the MLQ-5X was below 0.05, and the goodness of fit index (GFI) was 0.91, which was slightly above the recommended level of 0.90, indicating a reasonable level of fit. The adjusted goodness-of-fit index (AGFI) was 0.90 and the comparative fit index (CFI) was 0.91 (Avolio & Bass, 2004).

In addition, reliability for the MLQ-5X has been consistent across cultures and diverse contexts, including health care settings. Reliability refers to the degree of consistency, accuracy or precision in measurement by an instrument (Polit & Beck, 2012). Bass reports aggregate internal consistency reliability (Cronbach's alpha) for each

leadership factor of the MLQ-5X ranging from 0.74 to 0.94 for all scales (Avolio & Bass, 2004; Bass & Riggio, 2006). The alpha scale reliability is a measure of internal consistency of a scale, and values above 0.70 indicate satisfactory reliability (Kline, 2011; Nunnally, 1978). The reliabilities obtained from numerous studies are generally high and exceed the standard cut-off of 0.70 for internal consistency recommended in the literature, indicating that the MLQ-5X reliably measures each of the leadership factors (Bass & Avolio, 2000). In this current study, the Cronbach alpha reliabilities were within acceptable limits ranging from 0.87 to 0.93 for transformational leadership subscales, and between 0.83-0.90 for transactional leadership subscales, with the exception for overall scale (summated score of all dimensions) was 0.57. A summary of Cronbach's alpha reliability values for each of the instruments and subscales is found in Table 3.

Scoring. Respondents' ratings of their leader's behaviour are aggregated to derive the leader's scores of transformational and transactional leadership styles. Individual item responses are summed and averaged for each of the transformational leadership factors, yielding an average raw score that can range from 0 to 4 for each factor (Bass & Avolio, 2000). A high score for transformational and transactional leadership factors indicate followers' belief in their leader's effectiveness.

Table 3

Internal Consistency Reliabilities for Variables and Subscales

Scale	# of Items	Cronbach's alpha
MLQ-5X (Transformational leadership)	20	.97
Idealized influence	4	.87
Idealized influence-behavioural	4	.90
Inspirational motivation	4	.93
Intellectual stimulation	4	.91
Individualized consideration	4	.92

Scale	# of Items	Cronbach's alpha
MLQ-5X (Transactional leadership)	12	.57
Contingent reward	3	.89
Management-by-exception-active	3	.83
Management-by-exception-passive	3	.90
Conditions of Work Effectiveness-II (CWEQ-II)	12	.84
Information	3	.84
Support	3	.73
Resource	3	.80
Opportunity	3	.82
Clinical Leadership Survey (CLS)	15	.86
Challenge the process	3	.54
Inspiring a shared vision	3	.73
Enabling others to act	3	.70
Modeling the way	3	.67
Encouraging the heart	3	.81
Global Job Satisfaction (GJS)	4	.86
Nurse-assessed Adverse Events	5	.80

Structural Empowerment

Structural empowerment was measured using the four core subscales (information, support, resources and opportunity) of the *Conditions of Work Effectiveness-II* (CWEQ-II) developed by Laschinger et al. (2001c). The CWEQ-II consists of 12-items that measures nurses' perceptions of access to empowerment structures originally described by Kanter (1977). The subscales are scored on a 5-point Likert scale ranging from 1 (none) to 5 (a lot). A sample of an item includes, "I have time available to accomplish job requirements." The subscales are scored by summing and averaging the items. Total empowerment score is measured by summing the means of the four subscales that range from 4 to 20. Higher overall scores represent higher perceptions of empowerment construct. The CWEQ-II has been used extensively in studies of nurses in direct care roles across a variety of work settings with excellent psychometric

properties, such as high internal reliability (Cronbach's alpha ranging from 0.78 to 0.93) in studies conducted between 1996 and 2013 (Laschinger et al., 2001; Laschinger, Wong, & Grau, 2013a). For the current study, the Cronbach alpha reliabilities were overall high (0.73-0.84) for the subscales and for the overall scale (0.84) (see Table 3). Laschinger et al. (2001d) established construct validity of the CWEQ-II in a CFA and it revealed a good fit of the hypothesized factor structure (χ^2 = 279, *df* = 129, CFI = 0.99, IFI = 0.99, RMSEA = 0.054).

Staff Nurse Clinical Leadership

The *Clinical Leadership Survey* (CLS) (Patrick et al., 2011) was used to measure the leadership practices of staff nurses providing direct patient care in acute care settings. The CLS was derived from Kouzes and Posner's (1995) leadership model adapted to reflect clinical leadership practices of staff nurses at the bedside. After a series of CFAs, a 15-item CLS scale was created consisting of five subscales (challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart), with three items per subscale. Items are rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). A sample of an item includes, "I am able to provide evidence-based rationale for my clinical decisions." Items for each subscale are summed and averaged to provide a score for each subscale, which are then summed to give a total clinical leadership score that range from 5 to 25. Higher scores indicate that respondents perceived themselves as leaders in their clinical practice. Similar to the Cronbach's alpha of 0.86 reported by Patrick et al. (2011) in the initial validation of the scale, in this study, the overall Cronbach's alpha was 0.87. Similar to the Patrick et al.'s study, the Cronbach's alphas for the Challenging the Process and Modeling the Way

clinical leadership subscales were slightly lower than 0.70 (0.54 and 0.67, respectively). In a sample of staff nurses (n = 480), Patrick et al. (2011) established construct validity of the CLS scale in a CFA, which revealed a good fit with the observed data (χ^2 = 128.6, df = 85, CFI = 0.96, TLI = 0.95, RMSEA = 0.05).

Nurse-assessed Adverse Events

Staff nurses' ratings of adverse patient outcomes was measured using an instrument developed by Sochalski (2001) and derived from the Nursing Quality Indicators formulated by the American Nurses Association (American Nurses Association, 2000). This scale is comprised of five items that assess the nurses' perceptions of the incidence of common adverse patient outcomes or complications over the past year. Nurses were asked to rate the frequency of occurrence of specific adverse events (medication error, patient falls with injuries, pressure ulcers after admission, healthcare associated infections, and complaints from the patient and/or family), which has occurred within the past year on a scale from 1 (never) to 4 (frequently). An overall score was computed by summing and averaging the five items. In studies of Canadian hospital-based nurses, Cronbach alpha coefficients of 0.75 (Laschinger & Leiter, 2006) and 0.81 (Wong & Giallonardo, 2013) were obtained which is within satisfactory limits. In this current study, the Cronbach alpha was 0.79. This scale has been used extensively in large national studies of nurses and has shown acceptable reliability and validity (Aiken et al., 2001, 2013; Giovannetti et al., 2002; Laschinger, 2014; Sochalski, 2004). In the current study, the scale reliability was 0.80.

Job Satisfaction

Job satisfaction was measured using the *Global Job Satisfaction* (GJS) questionnaire adapted from Hackman and Oldham's (1976) Job Diagnostic Survey (Laschinger, 1996). The GJS is a 4-item global measure of respondents' satisfaction with their jobs and their coworkers. Respondents rate items on a 5-point Likert scale, with a rating of 1 (strongly disagree), indicating the lowest score and a rating of 5 (strongly agree), indicating the highest score for job satisfaction and an example is "I feel very satisfied with my job." An overall job satisfaction score was computed by summing and averaging the four items. The GJS survey has been used in nursing populations and found to have acceptable internal consistency reliability of 0.78 and 0.85 (Laschinger, Finegan, Shamian, & Wilk, 2004; Purdy et al., 2010). In the present study, the Cronbach's α was 0.86. The construct validity of the GJS has been established in CFA, which showed a good fit for the hypothesized factor structure ($\chi^2 = 667$, $df = 342$, CFI = 0.97, RMSEA = 0.07) (Laschinger et al., 2004).

Extraneous Variables/ Demographics

Extraneous and confounding variables are theoretically relevant variables other than the independent and outcome variables in the study. Controlling extraneous and confounding variables is important because they may affect the hypothesized relationships under study and pose a threat to the validity of the findings (Pedhazur & Pedhazur Schmelkin, 1991). Confounders are often demographic variables and although they cannot be changed (ascribed and achieved characteristics of the sample), researchers can statistically control for them. These theoretically relevant variables are important to include in the study because they can have strong influence on the outcome variables. In

this study, specific demographic characteristics of the staff nurses were collected for descriptive purposes (i.e., frequencies) and these were used as covariates/factors in preliminary analysis to assess their relationship to the dependent variables. Demographic details include age, sex/gender, level of education, specialty area, work status (full or part-time), years of nursing experience, years on current unit, and years of working with current manager.

Data Management

Data Integrity. Once the survey returned, a pre-analysis data screening was conducted to ensure the integrity and accuracy of the data coding and entry into the Statistical Package for the Social Sciences (SPSS) software, version 21.0 (IBM Corp, 2010). Data screening procedure proposed by Tabachnick and Fidell (2001) was utilized in managing the data (i.e., cleaning the data). As part of the data management process, the data was screened for missing values and data quality. Missing value analysis was conducted to determine how much data were missing and whether there was a random or systematic pattern to the missing data.

Missing Data Analysis. Missing data is a common problem, which poses a challenge even for a well-designed study. During data analysis, the pattern of missing data is just as important as the amount missing. Missing data is usually classified into three categories: missing completely at random (MCAR), missing at random (MAR), and not missing at random (NMAR), which describes how the missing values are related to the data, if at all (Rubin, 1976). According to Rubin (1976), missing data can be ignored, unbiased estimates can be obtained, if the data are MCAR. To determine the pattern of missing data in the data set, Little's MCAR test was conducted resulting in a chi-square

of 251.147, *df* at 263, significance at 0.690, which indicates that the data is indeed missing completely at random (Little & Rubin, 2002; Little, 1988). A significant MCAR test ($p > .05$) indicates weak evidence against the null hypothesis (i.e., failure to reject the null hypothesis), suggesting that the data is missing at random (no identifiable pattern exists to the missing data). Of the 378 subjects included in this study, there were 9 cases that had at least one independent variable item missing. Given that all variables in this sample contained less than 1% missing data, all the cases were kept in the analysis to avoid potential bias from excluding participants who were missing data.

There are various techniques for handling missing data in the estimation of structural equation models, such as listwise or pairwise deletion and regression imputation (Preacher & Hayes, 2008). However, with the availability of more sophisticated advanced methods, such as full information maximum likelihood (FIML) estimation, listwise and pairwise deletion is no longer deemed acceptable as these methods are notorious for biased and/or inefficient estimates especially, when more than 5% of the data is missing (Arbuckle, 1996; Little & Rubin, 2002). To manage missing data in this study, FIML estimation method was used in the structural equation modeling analyses in Mplus. FIML is a sophisticated advanced method that uses expectation-maximization algorithm to maximize the likelihood of all available raw data to obtain model parameter estimates, without a preliminary data preparation step (i.e., imputation) (Little & Rubin, 2002). An advantage of the FIML is that in cases where at least 50% of the items are present for a subscale, the estimation technique is able to generate subscale scores for the scale (Rubin, 1976; see Tabachnick & Fidell, 2001). By retaining the incomplete data as part of the analysis, this technique is advantageous as it neither

reduces sample size nor compromises the power. The FIML method requires that missing values are either MCAR or MAR (Arbuckle, 1996; Little & Rubin, 2002). FIML is becoming an increasingly popular technique for handling missing data because of its implementation in common software packages such as Mplus. The latest version of Mplus (version 7.3) (Muthén & Muthén, 2012) allows the direct inclusion of auxiliary statement which specifies that the variables (i.e., -999) will be used as missing data. For SEM analysis, FIML has been shown to yield more efficient and unbiased parameter estimates than other methods (Little & Rubin, 2002; Muthén & Muthén, 2012). Due to the theoretical benefits of ML estimation (Arbuckle, 1996), FIML was implemented in this study.

Statistical Analysis

Statistical analyses were performed using the SPSS software (version 21.0) (IBM Corp, 2010), and covariance-based structural equation modeling techniques using Mplus software (version 7.3) (Muthén & Muthén, 2012). Descriptive statistics (frequencies, percentages, means, standard deviations, and internal consistency reliability) were computed for all study variables to describe the sample characteristics.

Statistical tests of the assumption of normality

Once the data had been checked for data entry accuracy, the data were assessed to ensure that it met the underlying assumptions of normality required for structural equation modeling. The data were tested for influential cases; as such, an individual subject's data containing extremely low or high values as compared to the remaining data may unduly influence the estimation of the regression line (Neter, Kutner, Nachtsheim, & Wasserman, 1996). Therefore, to identify any potential influential data, all the major

study variables were assessed for normality and outliers, including the means, standard deviations, skewness, and kurtosis. Table 4 shows the normality assessment for the major study variables.

Table 4

Means, Standard Deviations, Skewness, Kurtosis, and the Test of Normality for the Major Variables

						Kolmogorov-Smirnov[a]		Shapiro-Wilk	
Variable	$\overline{X}$	***SD***	**Variance**	**Skewness**	**Kurtosis**	**Statistic**	***p***	**Statistic**	***p***
TRSFORM	2.05	.99	.992	-.079	-.870	.050	.024	.979	.001
TRSACT	1.85	.52	.280	.335	.569	.063	.001	.990	.015
CWEQ	11.91	2.71	7.366	-.024	.098	.035	.200	.995	.325
CLS	22.58	1.96	3.860	-.807	.174	.110	.001	.929	.001
JOBSAT	3.05	.97	.948	-.148	-.730	.106	.001	.977	.001
ADVERSE	1.83	.63	.397	.677	-.212	.130	.001	.938	.001

Note. $\overline{X}$ = mean; *SD* = standard deviation; TRSFORM (transformational leadership); TRSACT (transactional leadership); CWEQ (structural empowerment); CLS (staff nurse clinical leadership; JOBSAT (job satisfaction); ADVERSE (nurse-assessed adverse patient outcomes)

Assessment for normality of the latent variables in the model was performed based on skewness and kurtoses. Skewness is when the distribution of data is asymmetrical around the mean, and kurtosis is a higher peak or flatter distribution of data around the mean. As shown in Table 4, no absolute skew and kurtosis scores exceeded the limit of 1.0, suggesting the data has a normal distribution (Kline, 2011). A *z*-score for kurtosis and skewness was calculated for each measured scale. All skewness and kurtosis critical values were somewhere in the span of +/– 1.96 or non-significant at the 0.05 error level (Tabachnick & Fidell, 2001). In addition, the Kolmogorov-Smirnov (K-S) and the

Shapiro-Wilk (SW) tests were performed to further test the assumption of normality. Almost all of the values for the K-S and SW test were highly significant ($p < .05$), indicating that the distributions are not normal. However, the significance of the K-S and SW tests for the data shows how in relatively large samples ($n = 378$) even small and unimportant deviations from normality might be deemed significant (Tabachnick & Fidell, 2001). As a result, both tests were used in conjunction with visual inspection of the histograms, normal Q-Q plots and box plots, which showed that the data were slightly skewed and kurtotic but it does not differ significantly from normality. Overall, the descriptive analysis indicated that there were no univariate or multivariate outliers, and the error rate was less than 0.1%, suggesting no further auditing was necessary. In proceeding with the analysis, structural equation modeling (SEM) was conducted to examine the study hypotheses.

Structural Equation Modeling. SEM is a very powerful multivariate technique, which allows researchers to examine multiple relationships between one or more independent variables and one or more dependent variables in one single model. An analytic approach such as SEM can be used to test the relationships of all variables in a given model simultaneously — the measurement model (measurements of the theoretical constructs), and the structural model (model of hypothesized relationships). The measurement model deals with the relationships between measured variables (manifest or observable indicators) and latent variables (unobserved but inferred from measured variables). The structural model, however, deals with the relationships between latent variables. Valid tests of the theoretical model depend on the fit of the measurement model to the data (Keller & Kelvin, 2013). Although path analytic approaches can test

similar models, SEM is more robust and precise technique to test the hypothesized model as it accounts for random measurement error thereby providing a more reliable estimate of path coefficients (Kline, 2011). In SEM, latent variables account for random error because it separates true score variance from error variance. This is accomplished by calculating coefficients using a covariance matrix and estimation methods, such as maximum likelihood (ML) (Bollen, 1989). ML estimation method approximates model parameters that are most likely to result in the observed data (Hoyle, 2012). ML is the most widely used estimation technique because it generates reliable and efficient estimates and is also robust against moderate violations of the assumption of normality (Hair, Anderson, Tatham, & Black, 2012). Using SEM, the researcher is better able to provide careful interpretation about associations between variables that are caused by misleading variables that suppress real relationships or act as spurious causes for relationship that does not exist (Hair et al., 2012). In SEM, both measurement model and structural model are tested simultaneously; however, given that the validity of the theoretical model is dependent on how well the measurement model fits the observed data, it is important to first evaluate the validity of the measurement model before proceeding with the hypothesized model. Following the recommended two-step approach (Anderson & Gerbing, 1988; Schumacker & Lomax, 2004), the measurement model (convergent and discriminant validity) for each latent construct was evaluated independent of the structural model (nomological validity) in ascertaining the nature of the relationship between theoretical constructs and measured variables.

Measurement Model. The measurement model was assessed using CFA to demonstrate whether the measures have satisfactory level of validity and reliability. A

CFA reflects how theoretical constructs are operationalized and analyzes *a priori* measurement models where both the number of factors and their correspondence with the indicators are explicitly specified (Kline, 2011). Although the measures in this study are standardized questionnaires with acceptable psychometric properties, it was important to conduct a test of the measurement model *a priori* because unless the measures that were used to operationalize the constructs are trustworthy, any evaluation of the structural relationships would be problematic. In addition, by using CFA to test the measurement model separately from the structural model, researchers are able to detect potential source of model misspecification based on the overall goodness-of-fit indices (see Anderson & Gerbing, 1988). Assessment of the measurement properties of the constructs in this original sample ascertains the validity of the measures. To our knowledge, there are only few studies that have validated the MLQ-5X (Higgins, 2015), and the CLS (Patrick et al., 2011) in a sample of registered nurses in Ontario, Canada.

In this study, the measurement model was assessed to examine the extent of interrelationships and covariation (or lack thereof) among the latent constructs. Kline recommends that each latent construct be evaluated for the feasibility of the parameter estimates, appropriateness of standard errors and the significance of the parameter estimates. The assessments of the measurement properties of the study constructs focused on tests for: (1) individual item reliability, (2) internal consistency reliability, (3) convergent validity, and (4) discriminant (divergent) validity (Bagozzi & Yi, 2012).

The Assessment of Reliability

Reliability refers to the extent to which measures generate consistent results on repeated trials (Hair, Ringle, & Sarstedt, 2011). Several measures of reliability have been

developed such as Cronbach's alpha and the Fornell and Larcker's (1981) composite reliability measure (Bagozzi & Yi, 2012). Cronbach's alpha is a common metric for assessing the internal consistency of a scale. It measures how accurate a group of items captures a construct or scale. Composite reliability, however, is a measure of overall reliability of a collection of distinctive but similar items of a construct. Composite reliability (CR) assesses whether the items are sufficient in representing their respective construct and takes into account that construct items may have different factor loadings (Hair et al., 2011). A factor loading presents the level of a regression path from a latent variable to its indicators. In a measurement model, all of latent variables should have at least three indicators (the questionnaire item) (Hair et al., 2011). Although there are no universally accepted cut-off values for indicator reliability and composite reliability (Bagozzi & Yi, 2012), to determine individual item reliability, it is suggested that each of the absolute standardized loading of each indicator should be at least 0.5, whereas 0.70 or greater suggest better indications of the observed variables for their respective latent variable (Kline, 2011). Cronbach's alpha values and composite reliability values of 0.70 or higher indicate adequate internal consistency (Kline, 2011).

To assess the reliability of the constructs, internal consistency of measures were assessed with the Cronbach's alpha coefficients and the Fornell and Larcker's (1981) composite reliability method. In this study, reliability estimates show support for the internal consistency of the latent variables (see Table 9). CR is calculated by Equation 1.

$$\mathrm{CR} = \frac{\left(\Sigma_{\iota=1}^{n}\lambda_{y\iota}\right)^2}{\left(\Sigma_{\iota=1}^{n}\lambda_{y\iota}\right)^2 + \left(\Sigma_{\iota=1}^{\rho}Var(\varepsilon_{\iota})\right)} \qquad \text{eqn(1)}$$

CR = indicates composite reliability
where λ_y = The standardized factor loading
$Var(\varepsilon_\iota)$ = The variance due to the measurement error.

The Assessment of Validity

The accuracy of the measurement model is also affected by validity. Validity refers to the extent to which the measure accurately represents the construct it intends to measure (Hair et al., 2011). In this study, the validity of the measurement model was assessed by convergent and discriminant validity. Convergent validity refers to the extent to which measures that are intended to capture the same construct relate to each other. In other words, it is the variance shared between a construct and its measures — meaning that the latent variable explains more than half of its indicators' variance. When assessing convergent validity, researchers are interested in whether scores on the measure are related to other measures of the same construct, or similar constructs (i.e., high correlations). In this study, convergent validity was measured by average variance extracted (AVE). According to Hair et al. (2011), an AVE value equal to or more than 0.5, indicates a sufficient degree of convergent validity.

To evaluate convergent validity, the variance shared between a construct and its measures, the AVE for each construct was evaluated against its correlation with the other constructs. Preliminary evidence of convergent validity was determined when the AVE of each construct was higher than its correlation with other constructs. AVE measures the level of variance captured by a construct versus the level due to measurement error, and

its value of 0.5 and above is acceptable (Hair et al., 2010). AVE is calculated by Equation 2.

$$\text{AVE} = \frac{\sum_{i=1}^{n} \lambda_i^2}{n} \qquad \text{eqn(2)}$$

AVE = Average variance extracted
where λ_i = The standardized factor loading
n = The number of items

Discriminant validity, on the other hand, is when scores on the measure are not related to other measures that are theoretically different (i.e., low or no correlations). It is a test to ensure there is no significant variance among different variables and that there is differentiation between one construct and another in the same model. According to Hair et al. (2010), if the correlations between two latent variables exceed 0.90, it means that there is significant overlap of constructs, which will result in multicollinearity problems in an analysis. Multicollinearity is problematic because it can cause standard errors of regression coefficients to be very large, and as a result, the precision of the estimates of model coefficients could be very low. In order to prevent the possible statistical problem of multicollinearity, discriminant validity assessment was performed.

There are many ways to assess discriminant validity between constructs. For example, the researcher can perform a paired construct test (Jöreskog, 1971), or apply the Fornell and Larcker's (1981) technique for evaluation of constructs. In this study, given limitations in data collection (cross-sectional), and a need for more stringent evaluation of validity, it appears that the Fornell and Larcker's (1981) technique represents the best

method to apply. Discriminant validity of the measurement model was established using three evaluation criteria: the Maximum Shared Squared Variance (MSV), Average Squared Variance (ASV), and the square root of AVE. Using this technique, discriminant validity was established by comparing the squared correlation between two constructs. By rule of thumb, the square root of AVE must be greater than the correlations involving the constructs (Fornell & Larcker, 1981). Refer to Table 9 and Table 10 in Chapter 4 for further details.

Model Evaluation/ Fit Statistics. After estimating a measurement model, given a converged and proper estimation solution, it is important to assess how well the specified model accounted for data with overall goodness-of-fit. SEM uses a number of goodness-of-fit indices that help in assessing whether the hypothesized model fits the observed data. There are two categories of fit indices: absolute and incremental fit. An absolute fit index assesses the overall model-to-data fit and provides the primary indication of how well the theoretical model fits the data (Bollen, 1989). Examples of absolute fit index include the chi-square goodness-of-fit test (χ^2), chi-square/degrees of freedom ratio (χ^2/df), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), the standardized root mean square residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). One of the most common omnibus fit indices is chi-square goodness-of-fit, which is a likelihood ratio statistic for testing a hypothesized model versus the alternative model that the covariance matrix is unconstrained (Bagozzi & Yi, 2012). However, chi-square goodness-of-fit is sensitive to data non-normality, model complexity, and tends to inflate as the sample size increases (Hu & Bentler, 1999). When sample size is relatively large, even a slight divergence from the data, which may be of

no practical or theoretical importance, can potentially lead the chi-square test to reject the model. In response to the sample size sensitivity problem, alternative fit indices have been proposed to supplement the chi-square statistic, including the goodness of fit indices.

The generally agreed upon critical value for the GFI and AGFI is 0.90 or higher (Hu & Bentler, 1999), which are indication of good model-data fit. RMSEA is used as a measure of the lack of fit between the data and the model, and values between 0.00 and 0.06 indicate a good fitting model (Hu & Bentler, 1999). Among all the fit indices, SRMR is the badness-of-fit index, the most sensitive index to models with simple to moderate misspecification (Hu & Bentler, 1999). Values for this statistic range between 0.0 and 1.0, with large value indicating worse fit. The acceptable threshold level for relative chi-square (χ^2/df) is 3:1 (Kline, 2011). Several other indices that fall into the category of absolute indices including the information theoretic indices, such as the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). AIC and BIC are parsimony fit indices and are generally used to compare competing models. The model that produces the lowest value is the most superior suggesting a good fitting, parsimonious model (Hu & Bentler, 1999). The criterion cut-off used to evaluate the goodness of fit relative to the observed data are summarized in Table 5.

Table 5

Criteria for Model-fit Indices for Measurement Model

Model-fit Criterion	Acceptable Level	Interpretation
	Absolute Fit Indices	
Chi-square (χ^2)	Low χ^2 relative to degree of freedom with a non-significant *p*-value ($p \geq .05$) (Jöreskog, 1993)	Compares obtained χ^2 value with tabled value for given *df*

Model-fit Criterion	Acceptable Level	Interpretation
Degree of freedom (*df*)	> 0 (Gerbing & Anderson, 1992)	—
Relative χ^2 ratio (χ^2/df)	2:1 (Tabachnick & Fidell, 2001) 3:1 (Kline, 2011)	Good fit threshold (adjusts for sample size)
Standardized Root Mean Square Residual (SRMR)	< .08 (Hu & Bentler, 1999)	Value less than .03 represent excellent fit
Root Mean Square Error of Approximation (RMSEA)	< .05 – .08 (Schumacker & Lomax, 2004)	Value of .05 to .08 indicates close fit. Favours parsimony
Goodness of Fit Index (GFI)	0 (no fit) to 1 (perfect fit) (Hu & Bentler, 1999)	Value close to .90 or .95 reflect a good fit
Adjusted Goodness of Fit Index (AGFI)	0 (no fit) to 1 (perfect fit) (Hu & Bentler, 1999)	Value close to .90 or .95 reflect a good fit
Incremental Fit Indices		
Comparative Fit Index (CFI)	0 (no fit) to 1 (perfect fit) (Hu & Bentler, 1999)	Normed, 0-1 range. Value close to .90 or .95 reflects a good model fit
Tucker-Lewis Index (TLI)	0 (no fit) to 1 (perfect fit) (Hu & Bentler, 1999)	Non-normed, values can fall outside the 0-1 range. Favours parsimony
Incremental Fit Index (IFI)	0 (no fit) to 1 (perfect fit) (Hu & Bentler, 1999)	Value close to .90 or .95 reflects a good model fit

The alternative category of fitness is the incremental fit indices (IFI), which measure improvement in fit by comparing a target model with a more restricted, nested baseline model (Bentler & Bonett, 1980; Hu & Bentler, 1999). Examples of incremental fit indices include the comparative fit index (CFI), Tucker Lewis Index (TLI), and normed fit index (NFI) (Bentler & Bonett, 1980). Hu and Bentler (1999) suggested values of 0.90 or higher as criterion for adequate fit, with higher value indicating larger improvement over the nested model in fit. In SEM, the fit indices determine whether the model is acceptable (i.e., a good-fitting model), in other words, the model is reasonably consistent with the data and does not require re-specification. A good fitting

measurement model is required before interpreting the causal paths of the structural model (Kenny, 2012).

Structural Model. Once the measurement model has been specified, structural relations among the latent variables are then modeled just as they are in path models and are assessed for nomological validity — the extent to which the structural relationships among constructs and its respective measures correlate in the theorized direction. In the assessment of the structural model, the emphasis is on testing the hypothesized structural relationships among the latent factors (Kline, 2011). Specifically, both standardized and unstandardized parameters (i.e., path coefficients) were estimated to compute the direct, indirect and total effects of latent variables. Path coefficients, which reflect the structure of the model, correspond to regression beta (β) weights, representing the expected change in an endogenous variable when an exogenous variable changes by one unit, while the other exogenous variables are held constant (or controlled for) (Bagozzi & Yi, 2012). Structural coefficients are bounded by the range of ±1(Keller & Kelvin, 2013). Higher values of the coefficients indicate stronger or larger magnitude of the relationship between the two variables, while the sign (negative or positive) of the coefficient indicates the direction of the relationship. As part of the analysis of the structural model, in this study, mediation and moderation analyses were carried out to assess indirect effects of the hypothesized relationships.

Mediation Analysis. SEM offers considerable advantages over regression in evaluating mediation (indirect) effects. To estimate the significance of indirect effects in this study model, the bias-corrected bootstrapping method was performed because this procedure has greater statistical power even in small samples (Mackinnon, Lockwood, &

Williams, 2004). Bootstrapping is a computationally intensive method that involves repeatedly sampling from a given dataset and estimating the indirect effect (i.e., calculate standard errors) (Preacher & Hayes, 2008). The bootstrapping approach is a nonparametric technique for assigning measures of accuracy to sample estimates (Hayes, 2013). Mackinnon, Lockwood, and Williams (2004) argue that the value of bootstrapping outweighs other methods (i.e., Sobel test or causal steps approach) on the grounds that bootstrapping has greater statistical power and maintains reasonable control over the Type 1 error rate. Unlike the Sobel test, bootstrapping does not impose the assumption of normality on the statistical distribution of the sample. Hayes (2013) recommends at least 1,000 or more resampling of dataset when calculating a bias-corrected (BC_a) confidence interval. Overall, the bootstrapping approach is a more valid and powerful method for testing explicitly the mediation effects (Mackinnon et al., 2004), and for this reason, it is the method of choice in mediation analysis in this study.

Moderation Analysis. In testing the moderating effect in SEM, the latent moderated structural equations (LMS) procedure in Mplus (Muthén & Muthén, 2012) was used. LMS is a computationally intensive procedure for estimating multiple latent interactions and quadratic effects that do not require the creation of product indicators (Klein & Moosbrugger, 2000). In the LMS method, researchers do not have to alter their measurement model (in estimating interaction effects) to fit their structural model. The LMS method uses the expectation-maximization (EM) algorithm to generate the distributions of the exogenous and endogenous variables, based on all model parameters including the interaction effect. EM is an iterative procedure for deriving the maximum likelihood estimates of model parameters of an underlying distribution from a specific

data set (Klein & Moosbrugger, 2000). The LMS technique is beneficial in that it directly analyzes raw data (instead of covariance matrices) from the nonproduct indicators and explicitly takes into account the degree of nonnormality and nonlinear effects in latent variable models (Klein & Moosbrugger, 2000). In simulated studies, Klein and Moosbrugger (2000) suggest that the LMS method provides efficient parameter estimates and robust standard errors which are unbiased and not attenuated by measurement errors, and this serves to increase a study's power.

Ethical Considerations

Prior to data collection, approval for this study was obtained from the Western University Health Science Research Ethics Board (see Appendix A). Participants received a consent form, which fully disclosed the research process, risks and benefits associated with this study and the contact information for the researcher, faculty advisor and the Institutional Review Board (IRB). Participation was entirely voluntary and individuals could enter and withdraw from the study at any stage of the research process. To maintain confidentiality, respondents' names did not appear on any survey and each participant was assigned a unique identification number. Due to the nature of the questionnaire content, all completed surveys were secured in a locked filing cabinet in the co-investigator's office at Western University and electronic data files were kept in the researcher's password protected computer. Any means to identify the participants was secured and accessible only to the researcher and faculty advisor. All raw data will be destroyed five years after the data collection was completed. Anonymity and confidentiality was assured in all communication with participants and only group data will be presented in public forum.

Risks and Benefits

There are no known risks or injuries that were experienced by nurses who agreed to be part of the study. By participating in this study, nurses may benefit from the increased understanding on how leadership influences the nursing work environment and how this, in turn, affects nurse and patient outcomes. Understanding the processes or mechanisms through which leaders can exert positive influence on desired organizational outcomes serves to help nurse administrators and managers address issues of leadership that can make the workplace healthier and empowering for nurses, potentially promoting patient safety outcomes.

Summary

This research utilized a predictive non-experimental approach to analyze the study hypotheses. In this chapter, the data collection and analysis were provided. Data were collected from registered nurses across Ontario employed in direct care positions to account for their perception of their manager's leadership behaviours. To test the hypothesized model, data were analyzed using SEM in Mplus software. The results of the analysis are reported in Chapter 4, and recommendations on the study findings are presented in Chapter 5.

Chapter 4

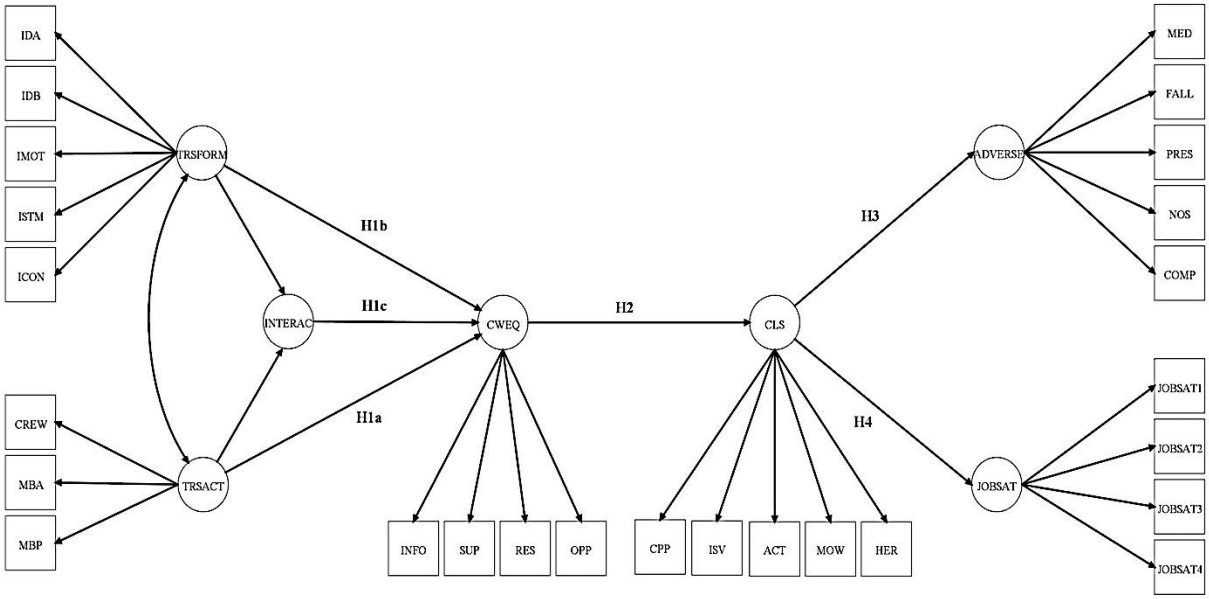
Results

The results of the statistical analyses based on the methodological approach outlined in Chapter 3 are described in detail in this chapter. The descriptive results of the study variables are presented followed by the results of the hypotheses testing. The discussion is divided into three sections: (a) a description of the demographic characteristics of the sample, (b) the evaluation of the measurement models of the major study variables, and (c) a presentation of the full model that was used to test the hypotheses of this study. The chapter concludes with a summary of the results.

Overview

The overarching objective of the present study was to obtain a greater understanding of the underlying processes through which leadership behaviours influence nurse and patient safety outcomes. More specifically, this research was aimed at testing the moderation effect of transformational leadership on transactional leadership and the effects of structural empowerment on staff nurse clinical leadership, nurse job satisfaction and frequency of nurse-assessed adverse patient outcomes. The study hypotheses are depicted in the hypothesized model (Figure 2b).

Figure 2b. Hypothesized model of transformational leadership and nurse and patient safety outcomes



Note: TRSACT (transactional leadership); CREW (contingent reward); MBA (management-by-exception-active); MBP (management-by-exception-passive); INTERAC (interaction term); TRSFORM (transformational leadership); IDA (idealized influence-attributes); IDB (idealized influence-behaviour); IMOT (inspirational motivation); ISTM (intellectual stimulation); ICON (individualized consideration); CWEQ (structural empowerment); CLS (staff nurse clinical leadership); CPP (challenge the process); ISV (inspiring a shared vision); ACT (enabling others to act); MOW (modeling the way); HER (encouraging the heart); ADVERSE (nurse-assessed adverse patient outcomes); MED (medication error); PRESS (pressure ulcer); NOS (infection); COMP (complaints); JOBSAT (job satisfaction); JOBSAT1-JOBSAT4 (the four items of job satisfaction)

Descriptive Statistics

Response Rates

The target population was acute care staff nurses employed in direct care positions in Ontario hospital settings. Of the 1,000 eligible nurses working in acute care setting across Ontario who were surveyed, a total of 392 surveys were returned for an overall 39.2% response rate. Less than 5% (n =14) returned surveys stating they opted not to participate reducing the number of usable surveys to 378 (38%).

Demographic Characteristics of the Sample

The demographic characteristics of the nurses are summarized in Table 6. Participants were mostly females (94.2%), averaging 46 years of age, 21 years of nursing experience and 12.2 years working on their current hospital unit. Most (47.1%) had a diploma or bachelor's degree in nursing (45.2%) and worked full-time (68.3%) or part-time (23.8%) in medical-surgical (30.4%) or critical care (29.9%) specialty areas. The majority (63.5%) worked 20-30 hours per week and have been in their current organization for almost 16 years and reported to their current manager an average of 4.3 years. About 28% of nurses reported interacting with their manager at least once or twice a week. Overall, characteristics of this study cohort are relatively similar to those reported for all Ontario nurses (CIHI, 2016b; CNO, 2015).

Table 6

Demographic Characteristics of Nurses (n = 378)

	$\overline{X}$	*SD*
Age of respondent	46.03	11.27
Years of nursing experience	20.98	11.99
Years in current organization	15.99	10.91
Years on current unit	12.21	9.48
Years worked with current manager	4.30	4.61
	n	**%**
Gender		
Female	356	94.2
Male	22	5.8
Highest level of nursing education		
Diploma	178	47.1
Baccalaureate (BScN)	171	45.2
Master in Nursing	24	6.3
PhD	5	1.4
Specialty of current unit		
Med-surgical	115	30.4
Critical care	113	29.9
Maternal-child	38	10.1

	n	%
Mental health	10	2.6
Geriatric/ Rehab	7	1.9
Other/Float or Nursing Resource Unit	95	25.1
Current employment status		
Full-time	258	68.3
Part-time	90	23.8
Casual	30	7.9
Average hours worked per work		
≤19	26	6.9
20-39	240	63.5
≥40	111	29.4
Interaction with manager		
Never or once/twice a year	32	8.5
Once a month	58	15.3
Once every other week	58	15.3
1-2 times per week	106	28.0
3-4 times per week	60	15.9
At least once a day	64	16.9

Note. $\overline{X}$ = mean, *SD* = standard deviation

The means and standard deviations for the major study variables are presented in Table 7. On average, nurses reported a moderate degree of transformational leadership in their managers ($\overline{X}$ = 2.05, *SD* = .99, scale range 0-4), and low transactional leadership ($\overline{X}$ = 1.85, *SD* = .53). Of the transformational leadership subscales, inspirational motivation was rated highest ($\overline{X}$ = 2.30, *SD* = 1.08) and individualized consideration rated the lowest ($\overline{X}$ = 1.69, *SD* = 1.19). Management-by-exception-active was rated highest ($\overline{X}$ = 2.08, *SD* = .97) and management-by-exception-passive was rated the lowest ($\overline{X}$ = 1.71, *SD* = 1.18) among the transactional leadership subscales. Overall access to work environment factors that empower nurses to work effectively was slightly above the midpoint of the scale ($\overline{X}$ = 11.91, *SD* = 3.77, range 4-20). Access to information ($\overline{X}$ = 3.38, *SD* = .98) as well as opportunity for development and challenging work ($\overline{X}$ = 3.52,

SD = 1.02) contributed the most to overall empowerment. Access to resources ($\overline{X}$ = 2.47 *SD* = .88) and support ($\overline{X}$ = 2.54, *SD* = .89) were the lowest of the empowering workplace factors. Overall nurses perceived their clinical self-leadership as extremely high ($\overline{X}$ = 22.58, *SD* = 1.96), in particular, their ability of modeling the way ($\overline{X}$ = 4.72, *SD* = .37) and enabling others to act through collaboration ($\overline{X}$ = 4.60, *SD* = .43, range 1-5). The nurses' reported incidence of adverse patient outcomes or complications as rare ($\overline{X}$ = 1.83, *SD* = .63). Over the past year, nurses reported that patient and/or family complaints (36%) and nosocomial infections (28%) occurred occasionally to frequently. The incidences of medication errors and patient falls with injuries were reported to rarely occur. On average, nurses were moderately satisfied with their jobs ($\overline{X}$ = 3.05, *SD* = .97, score range 1-5) as 55% of nurses agreed or strongly agreed with statements regarding their satisfaction with the job.

Table 7

Mean and Standard Deviation Analysis

Scale	Score range	$\overline{X}$	*SD*
Transformational leadership (TRSFORM)	0-4 (not at all to frequently, if not always)	**2.05**	**.99**
Idealized influence-attribute (IDA)	0-4	2.20	1.05
Idealized influence-behavioural (IDB)	0-4	2.17	1.09
Inspirational motivation (IMOT)	0-4	2.30	1.08
Intellectual stimulation (ISTM)	0-4	1.90	1.08
Individualized consideration (ICON)	0-4	1.69	1.19
Transactional leadership (TRSACT)	**0-4**	**1.85**	**.52**
Contingent reward (CREW)	0-4	1.77	1.09
Management-by-exception-active (MBA)	0-4	2.08	.97
Management-by-exception-passive (MBP)	0-4	1.71	1.18

Scale	Score range	$\overline{X}$	*SD*
Structural empowerment (CWEQ)	**4-20** (none to a lot)	**11.91**	**2.71**
Information (INFO)	1-5	3.38	.98
Support (SUP)	1-5	2.54	.89
Resource (RES)	1-5	2.47	.88
Opportunity (OPP)	1-5	3.52	1.02
Staff nurse clinical leadership (CLS)	**5-25** (always never to almost always)	**22.58**	**1.96**
Challenge the process (CPP)	1-5	4.43	.53
Inspiring a shared vision (ISV)	1-5	4.52	.52
Enabling others to act (ACT)	1-5	4.60	.43
Modeling the way (MOW)	1-5	4.72	.37
Encouraging the heart (HER)	1-5	4.30	.74
Job satisfaction (JOBSAT)	**1-5** (strongly disagree to strongly agree)	**3.05**	**.97**
Jobsat1	1-5	3.44	1.06
Jobsat2	1-5	2.83	.99
Jobsat3	1-5	3.20	1.31
Jobsat4	1-5	2.72	1.21
Nurse-assessed adverse events (ADVERSE)	**1-4** (never, rarely, occasionally, frequently)	**1.83**	**.63**
Medication errors	1-4	1.67	.74
Patient falls with injuries	1-4	1.67	.78
Pressure ulcers	1-4	1.65	.81
Nosocomial infections	1-4	1.95	.92
Patient/family complaints	1-4	2.22	.95

Note. $\overline{X}$ = mean, *SD* = standard deviation. Variables in bold were modeled as latent variables in the structural model

Correlational Analyses

The relationships among the study variables were initially assessed using bivariate correlational analyses to obtain the Pearson product moment correlation coefficients (*r*). Correlations among most of the variables were statistically significant (refer to Table 8, & Appendix H). As expected, all transformational leadership subscales were positively related to structural empowerment. Total transformational leadership was significantly associated with structural empowerment ($r = .62$, $p < .01$), staff nurse clinical leadership ($r = .17$, $p < .01$), job satisfaction ($r = .57$, $p < .01$), and nurse-assessed adverse events ($r =$

-.13, p< .05). Overall transactional leadership had a significant positive correlation with structural empowerment (r = .15, p< .01); however, of the transactional leadership subscales, only contingent reward was positively related to empowerment (r = .58, p< .01). Management-by-exception-passive is negatively related to structural empowerment (r = -.46, p< .01), whereas management-by-exception-active was unrelated to empowerment (r = .093, n.s.). Surprisingly, the anticipated relationship between transformational and transactional leadership was not supported (r = .10, n.s.). The strongest correlation was between transformational leadership and the contingent reward dimension of transactional leadership (r = .84, p< .01). Overall, structural empowerment had significant correlations with staff nurse clinical leadership (r = .25, p< .01), job satisfaction (r = .61, p< .01), and adverse events (r = -.14, p< .01). In addition to being significantly associated with job satisfaction (r = .21, p< .01), staff nurse clinical leadership was significantly correlated with adverse events (r = -.13, p< .05). Lastly, as expected, nurse job satisfaction was inversely related to adverse events (r = -.28, p< .01). Refer to Appendix J for the multiple scatter plots illustrating relationships between the significant variables in the study.

Table 8

Correlations for all the Variables in the Proposed Model

Variable	1	2	3	4	5	6	7
1. Transformational leadership	–						
2. Transactional leadership	.10	–					
3. Structural empowerment	.62**	.15**	–				
4. Staff nurse clinical leadership	.17**	.05	.25**	–			

Variable	1	2	3	4	5	6	7
5. Job satisfaction	.57**	-.05	.61**	.21**	–		
6. Nurse-assessed adverse events	-.13*	-.02	-.14**	-.13*	-.28**	–	
7. TRSACTrev	.76**	-.24**	.52**	.17**	.53**	-.13*	–

Note. *p< .05, **p< .01. TRSACTrev = reverse-scored coding after cfa. The difference in the correlation between transformational and transactional leadership is explained in Appendix I.

Extraneous Variable Analysis

In this study, few demographic variables were significantly related to the major study variables. Years of experience in nursing was significantly related to staff nurse clinical leadership behaviour (r = .26, p< .001). Years of working with current manager had a significant but weak relationship with clinical leadership (r = .12, p< .05), and job satisfaction (r = .12, p< .05). The longer nurses work with their manager (r = .12, p< .05), and the more frequently they interacted with the manager (r = .14, p< .01), the more satisfied they were in their job. Given the weak magnitude of the correlations, the one significant demographic variable, 'years of working with manager' was included in the final model.

Analysis of Structural Equation Modeling

The analysis and interpretation of the proposed model was a two-stage process: (1) an assessment of the construct validity of the measurement model using CFA; and (2) an assessment of the structural model. In the analysis, the major study variables were modeled as second-order latent constructs with their respective dimensions (total scores were formulated as manifest variables).

Confirmatory Factor Analysis of the Major Constructs

Exogenous Variables

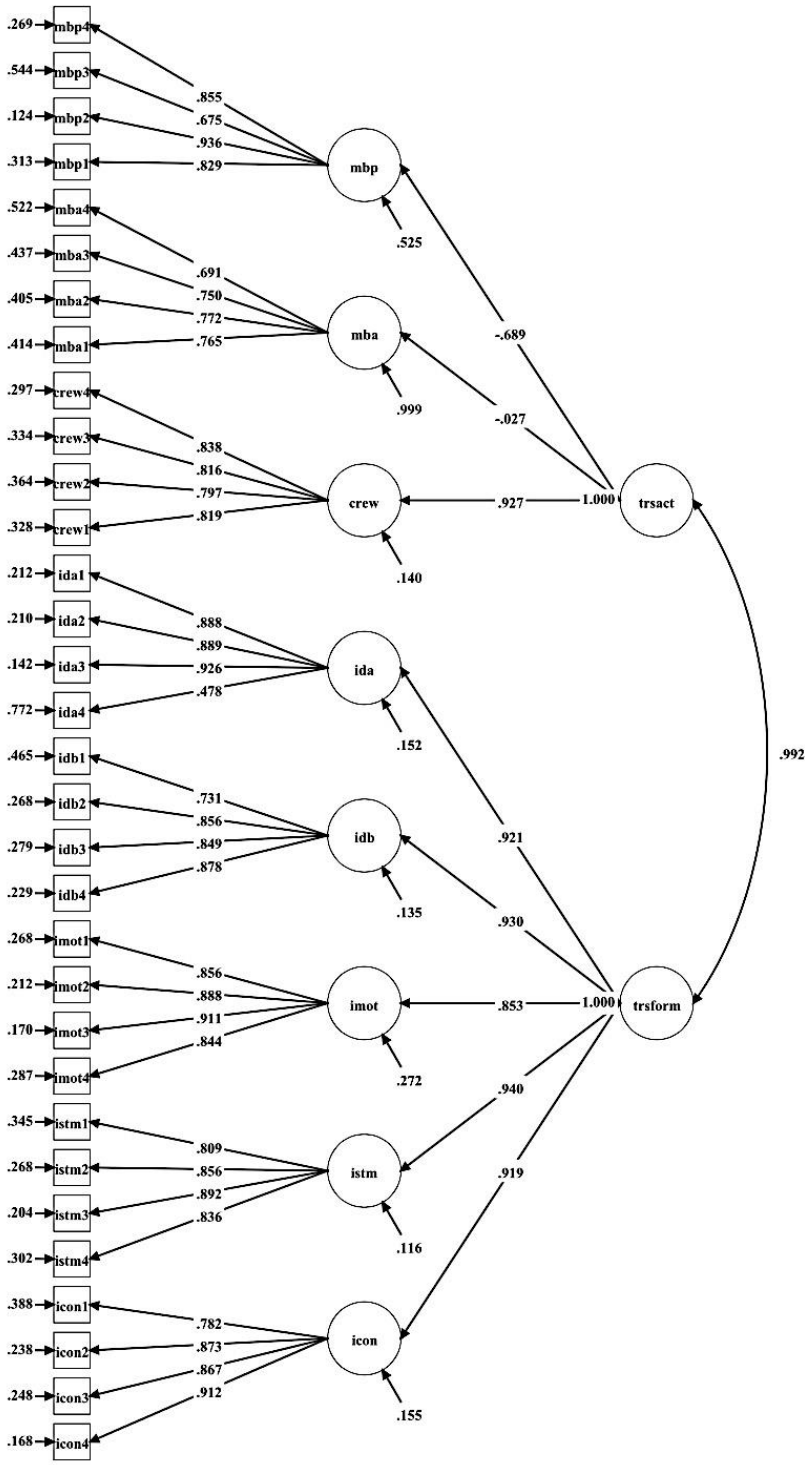
Transformational leadership. Figure 3 presents the CFA results of transformational and transactional leadership indicating the levels of factor loading for each item. The factor loadings between each second-order factor and the overall transformational leadership latent variable ranged from 0.85 to 0.94. The loadings for five facets of transformational leadership are: IDA (0.921), IDB (0.930), IMOT (0.853), ISTM (0.940), and ICON (0.919). Each of the five facets of transformational leadership exceeded the criterion of 0.50, so it can be concluded that as a set, the twenty observed variables of transformational leadership provide a reliable measurement of the construct.

Transactional leadership. While the transformational leadership loaded correctly, the standardized parameter estimates of management-by-exception-active (MBA) and passive (MBP) were negative and -0.027 and -0.689, respectively. Contingent reward (CREW), however, had strong factor loading of 0.927. Although the literature supports the discrimination of transactional and transformational leadership on theoretical and empirical grounds (Avolio, Bass, & Jung, 1999; Bass, 1985; Judge & Piccolo, 2004), some researchers (Bycio et al., 1995; Zhang, 2008), have been unable to distinguish transactional leadership from transformational leadership during CFA. In several studies, the management-by-exception measures have been problematic ultimately supporting a one-factor model of leadership behaviours that includes all five dimensions of transformational leadership and contingent reward. In this study, since the test of augmentation effect of transformational leadership on transactional leadership

serves as a fundamental motivation for the study, the factors of management-by-exception-active and passive were included as part of the analysis.

Overall, the measurement model for transformational and transactional leadership suggested a reasonably good fitting model: χ^2 = 1084.176, *df* = 455, *p* = 0.001, CFI = 0.941, TLI = 0.935, RMSEA = 0.051, SRMR = 0.051. Although the goodness-of-fit for the leadership construct was found to be reasonably good, consistent with past research on the MLQ (see Lowe et al., 1996), the correlation value was extremely high (*r* = .99) between transformational and transactional leadership, an indication of possible multicollinearity (Hair et al., 2010), an issue that arises when two or more variables are so highly correlated that they both essentially represent the same underlying construct. This finding is not surprising, as there appears to be substantial content overlap among the leadership items measuring transformational and transactional leadership (Antonakis et al., 2003; Judge & Piccolo, 2004).

Figure 3. A Confirmatory Factor Analysis for Transformational and Transactional Leadership



Endogenous Variables

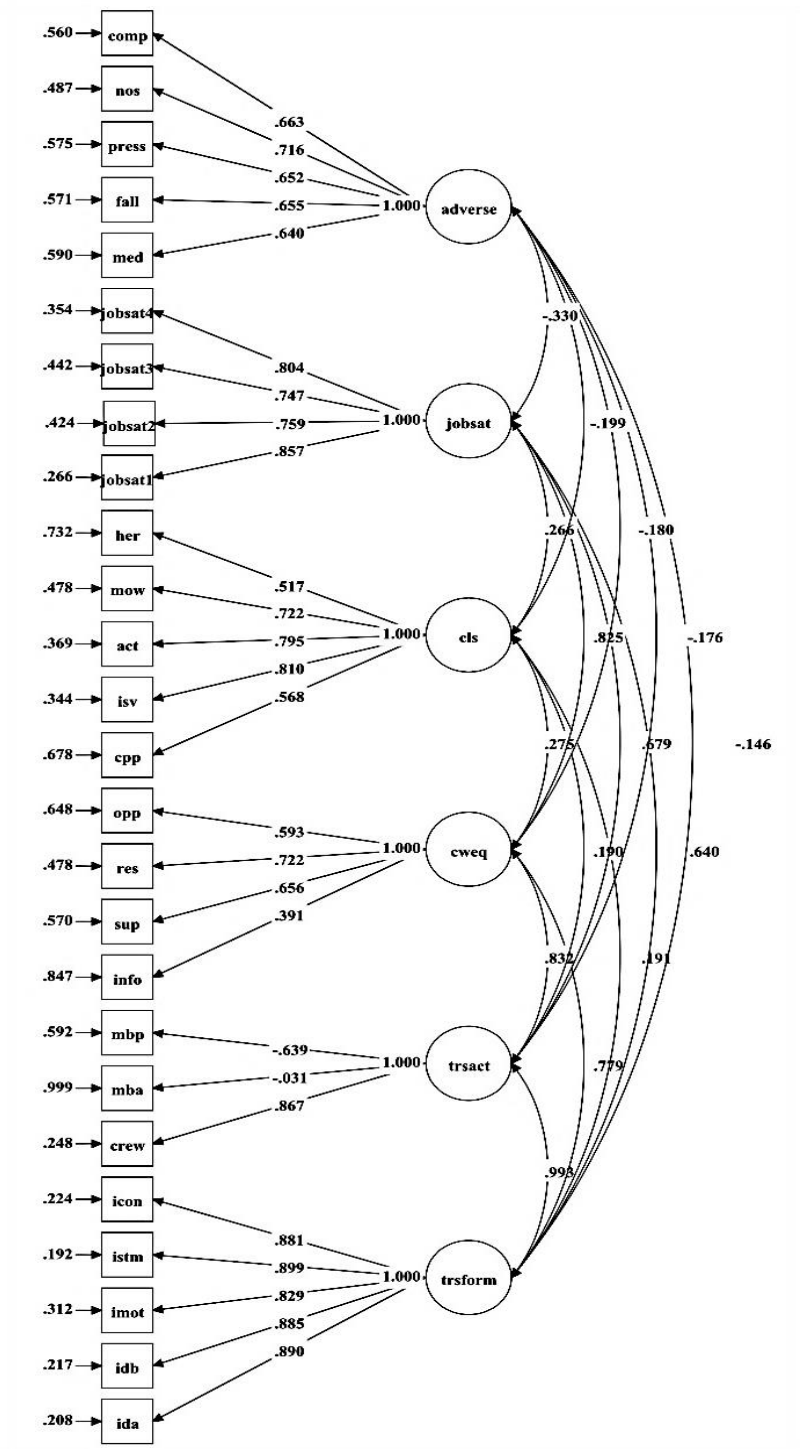
Structural Empowerment. The factor loadings between each first-order factor and the second-order structural empowerment latent variable ranged from 0.38 to 0.77 (see Figure 4). The model resulted in a good fit with the observed data: χ^2 = 151.602, *df* = 50, *p* = 0.001, CFI = 0.950, TLI = 0.934, RMSEA = 0.060, SRMR = 0.063.

Staff Nurse Clinical Leadership. All of the loadings for the second-order latent variable were above 0.70 (except HER), and were significant, which indicates that the latent variables explain more than 50% of variance for the indicators. This suggests reasonable convergent evidence. The model met fit criteria: χ^2 = 248.477, *df* = 85, *p* = 0.001, CFI = 0.916, TLI = 0.896, RMSEA = 0.061, SRMR = 0.048.

Outcome Variables. Results of testing the model shows that the item factor loadings for nurse-assessed adverse events were acceptable (0.65-0.73). All items for job satisfaction have factor loadings of 0.70 or higher (see Figure 4). The fit indices are reported in Table 9.

The measurement model fit reported in Table 9 shows that the overall fit indices for the CFA model were acceptable: χ^2 = 690.934, *df* = 284, *p* = 0.001, CFI = 0.923, TLI = 0.912, RMSEA = 0.056, SRMR = 0.050. Based on suggestion by Hair et al. (2010), at least three indices must be fitted well to determine the model fit. Keeping with this recommendation, mostly all goodness-of-fit indices exceeded the recommended threshold, which provides a platform for the development and assessment of the structural model.

Figure 4. Full Measurement Model (CFA and Standardized Estimates)



Model Fit Statistics:
$\chi^2 = 690.934$, $df = 284$, $p = 0.001$,
CFI = 0.923, TLI = 0.912, RMSEA = 0.056,
SRMR = 0.050

Table 9

Comparison of Measurement Model Fit Indices

Measurement Model	χ^2	*df*	RMSEA	CFI	TLI	SRMR
MLQ-5X Short Rater Form	1084.176	455	.051	.941	.935	.051
CWEQ-II	151.602	50	.060	.950	.934	.063
Clinical Leadership Survey (CLS)	248.477	85	.061	.916	.896	.048
Global Job Satisfaction (GJS)	26.781	2	.124	.967	.902	.027
Nurse-assessed Adverse Events	61.615	5	.136	.898	.795	.051
Full Measurement Model (Figure 4)	690.934	284	.056	.923	.912	.050

Note. χ^2 = Chi-Square, *df* = Degree of freedom, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, TLI = Tucker-Lewis index, SRMR = Standardized root mean square residual

Summary of the Measurement Models

In this study, five measurement models were tested for the main study variables. The results demonstrated that most of the fit measures indicate an acceptance of the measurement model, meaning that as a whole, the measurement models were valid and fairly reliable. Figure 4 shows the complete CFA of the measurement model. Examination of the CFA revealed that all factors have significant loadings and most exceed the cut-off value of 0.50, which is a recommended point especially for measures with newly developed items (i.e., CLS). Overall, the magnitude of the regression weights (or factor loadings) was strong supporting the validity of the measurement model.

Results of Reliability and Validity of Study Variables

The transformational leadership scale had a strong composite reliability (CR) of 0.94, and average variance explained (AVE) was 0.83 (see Table 10). These values exceed the recommended values of 0.70 and 0.50, respectively, for satisfactory convergent validity. In contrast, the CR for transactional leadership was 0.02, and AVE was 0.44, and these low values likely reflect the way the items were worded. Structural empowerment had a CR of 0.72, and AVE was 0.45. Similar results were found for staff nurse clinical leadership (Cronbach's α = .88; CR = .86; AVE = .41). Job satisfaction also demonstrated good reliability, with CR of 0.87, and AVE was 0.63. Lastly, the CR for nurse-assessed adverse patient outcomes was 0.80, and AVE was 0.44, suggesting that the constructs have adequate internal consistency. The results of this analysis provide preliminary evidence for the construct validity of the scales as indicated by the composite reliability coefficients, which generally exceed the AVE values.

Table 10

Reliability, Convergent and Discriminant Validity

Constructs	Items	Factor loadings	α	CR	AVE	MSV	ASV
Transformational leadership	IDA	.921	.989	.948	.834	.986	.412
	IDB	.930					
	IMOT	.853					
	ISMT	.940					
	ICON	.919					
Transactional leadership	CREW	.927	.566	.024	.445	.986	.441
	MBA	-.027					
	MBP	-.689					
Structural empowerment (CWEQ)	INFO	.386	.843	.725	.454	.692	.418
	SUP	.769					
	RES	.756					
	OPP	.676					

Constructs	Items	Factor loadings	α	CR	AVE	MSV	ASV
Staff nurse clinical leadership (CLS)	CPP	.769	.860	.866	.411	.076	.152
	ISV	.946					
	ACT	.948					
	MOW	.864					
	HER	.570					
Job satisfaction	JOBSAT1	.874	.864	.871	.630	.281	.346
	JOBSAT2	.752					
	JOBSAT3	.773					
	JOBSAT4	.769					
Nurse-assessed adverse events	MEDS	.639	.796	.799	.443	.009	.147
	FALL	.650					
	PRESS	.663					
	NOS	.726					
	COMP	.647					

Note. α = Cronbach's alpha, Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), and Average Shared Squared Variance (ASV).

Results of the discriminant validity of the measurement model are found in Table 10 and Table 11. The Maximum Shared Squared Variance (MSV) results were lower than the AVE for most of the constructs, except transformational, transactional and structural empowerment. The Average Shared Squared Variance (ASV) results were also lower than the AVE with the exception of transactional and structural empowerment. In addition, the square root of AVE was greater than the inter-construct correlations (see Table 11), which means that the discriminant values hold for the measurement model (Hair et al., 2010). Overall, the results from the various CFAs provided evidence suggesting that the measures are distinct from each other.

Table 11

Discriminant Validity

Variable	1	2	3	4	5	6
1. Transformational leadership	**.877**					
2. Transactional leadership	.095	**.624**				
3. Structural empowerment	.619**	.151**	**.600**			
4. Staff nurse clinical leadership	.175**	.047	.251**	**.283**		
5. Job satisfaction	.574**	-.052	.609**	.214**	**.794**	
6. Nurse-assessed adverse events	-.131*	-.024	-.141**	-.126*	-.282**	**.663**

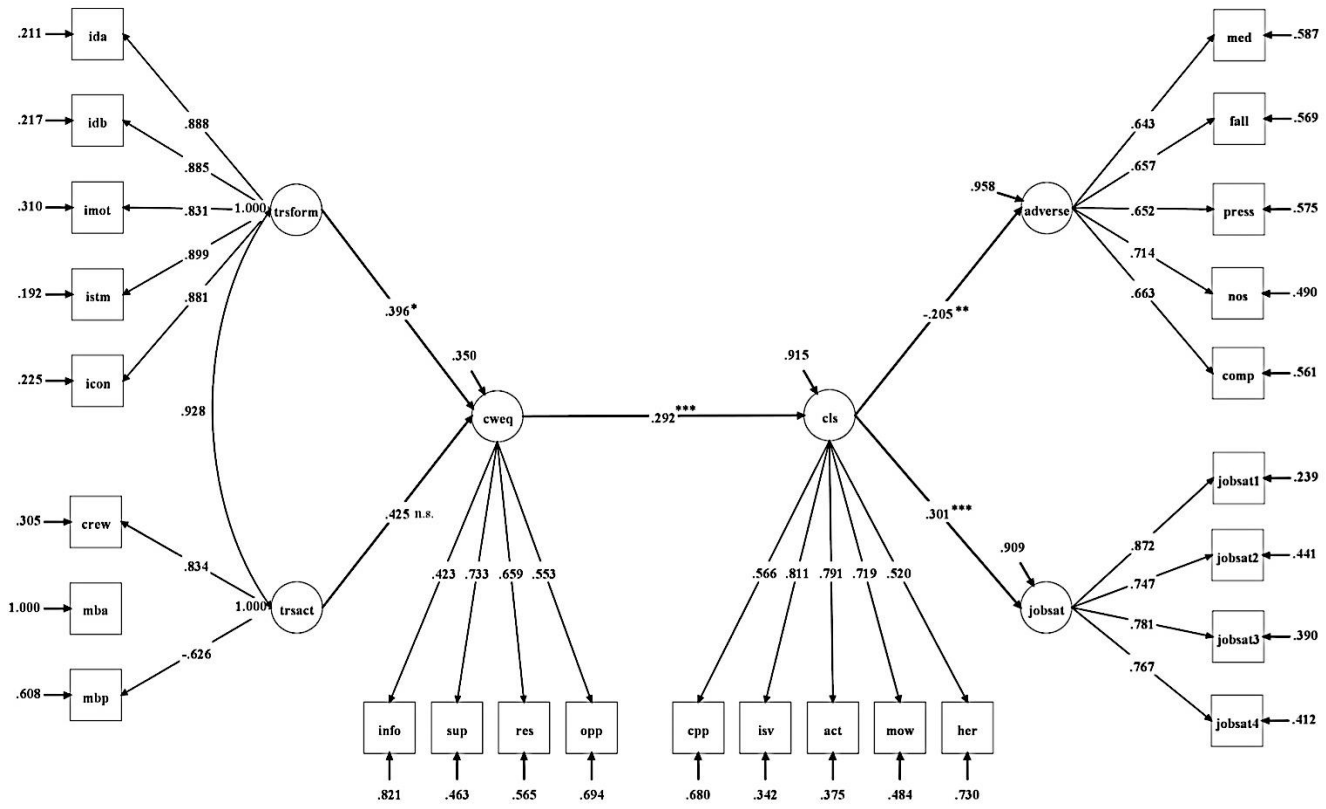
Note. Bold diagonal elements report the square root of AVE and other matrix entries report the inter-factor correlations.

Evaluation of the Structural Model (Test of the Hypothesized Model)

Testing Moderation Effect of Transformational Leadership

Results of the moderation analysis revealed no evidence of moderation effect (β = .036; p = .092). In other words, transformational leadership does not augment/ enhance the relationship between transactional leadership and structural empowerment and thus, Hypothesis 1c was not supported. Due to the lack of support for the moderation effect, the interaction term was removed and the model was respecified with transactional and transformational leadership as independent predictors of structural empowerment. This revised model (see Figure 5) is justifiable because there is empirical and theoretical support in the literature.

Figure 5. Initial Structural Model Results



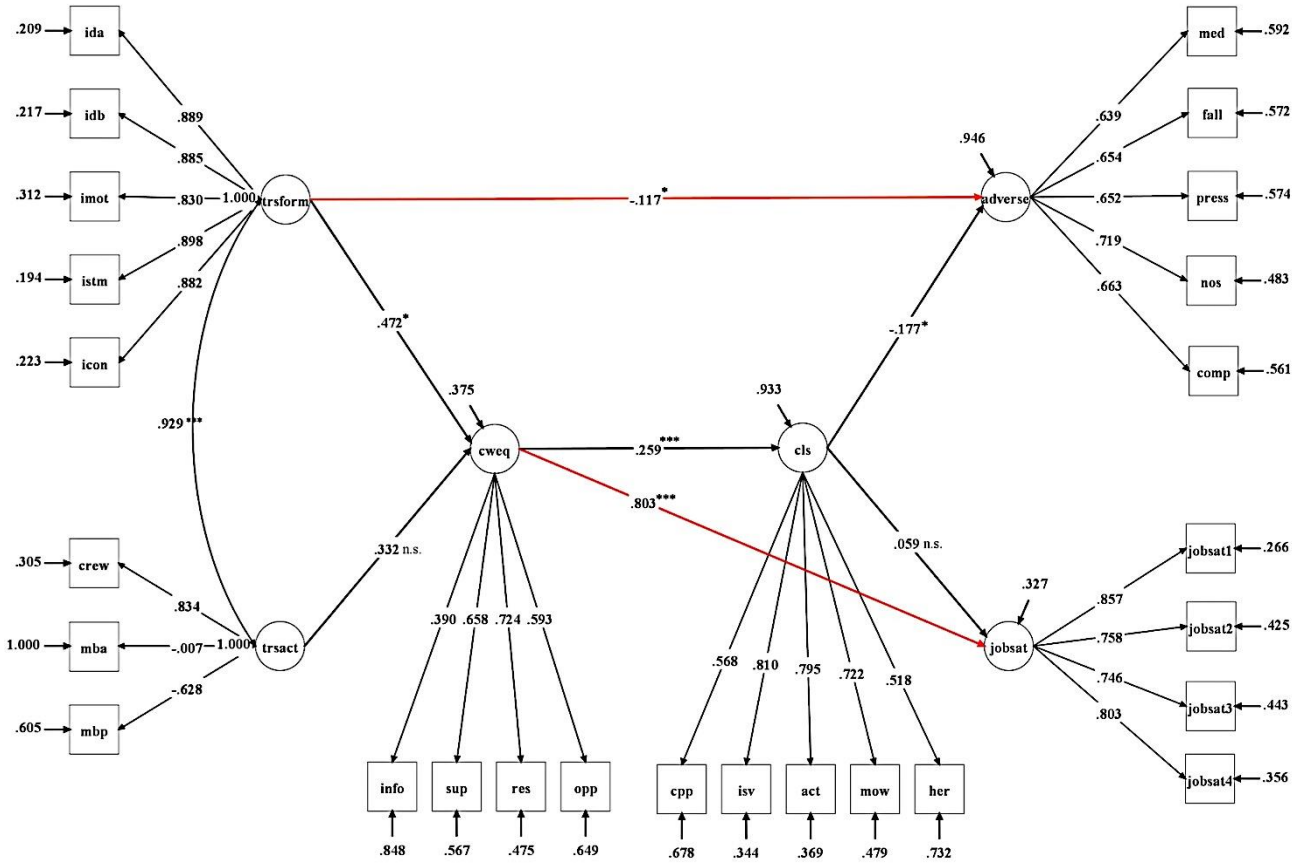
Note. *p< .05, **p< .01, ***p< .001; n.s. = non-significant path; TRSACT (transactional leadership); TRSFORM (transformational leadership); CWEQ (structural empowerment); CLS (staff nurse clinical leadership); ADVERSE (nurse-assessed adverse patient outcomes); JOBSAT (job satisfaction)

Test of the Hypothesized Model (Model Fit)

The fit indices suggested that the hypothesized model (see Figure 5) did not adequately fit to the data: χ^2 = 1086.311, df = 370, p = 0.001, CFI = 0.885, TLI = 0.874, RMSEA = 0.067, SRMR = 0.138. Based on theoretical considerations, empirical research, and modification indices and parameter change statistics for the standardized estimates, two additional paths would improve the model fit (Byrne, 2010; Kline, 2011).

First, the recommended direct path from structural empowerment to job satisfaction was logical and made theoretical sense. Access to structural factors in the workplace enables nurses to work efficiently, and thus are more likely to be satisfied with their job. For example, as noted in item on the *Global Job Satisfaction* scale state: "I feel the facility provides a supportive work environment in which to work." As a result, this pathway was added to the regression analysis. Second, a direct path was added from transformational leadership to nurse-assessed adverse events. This pathway also made theoretical sense because it is expected that transformational nurse managers have influence in facilitating patient safety in healthcare organizations by the leader's mentoring and consultation with staff. Subsequently, the revised model (see Figure 6) resulted in a substantially better fit to the data: $\chi^2 = 875.689$, $df = 368$, $p = 0.001$, CFI = 0.919, TLI = 0.910, RMSEA = 0.055, SRMR = 0.051, and did not dramatically alter the parameters estimated in the original model.

Figure 6. The Adjustment Model of Structural Relationship between Transformational Leadership and Nurse/ Patient Outcomes

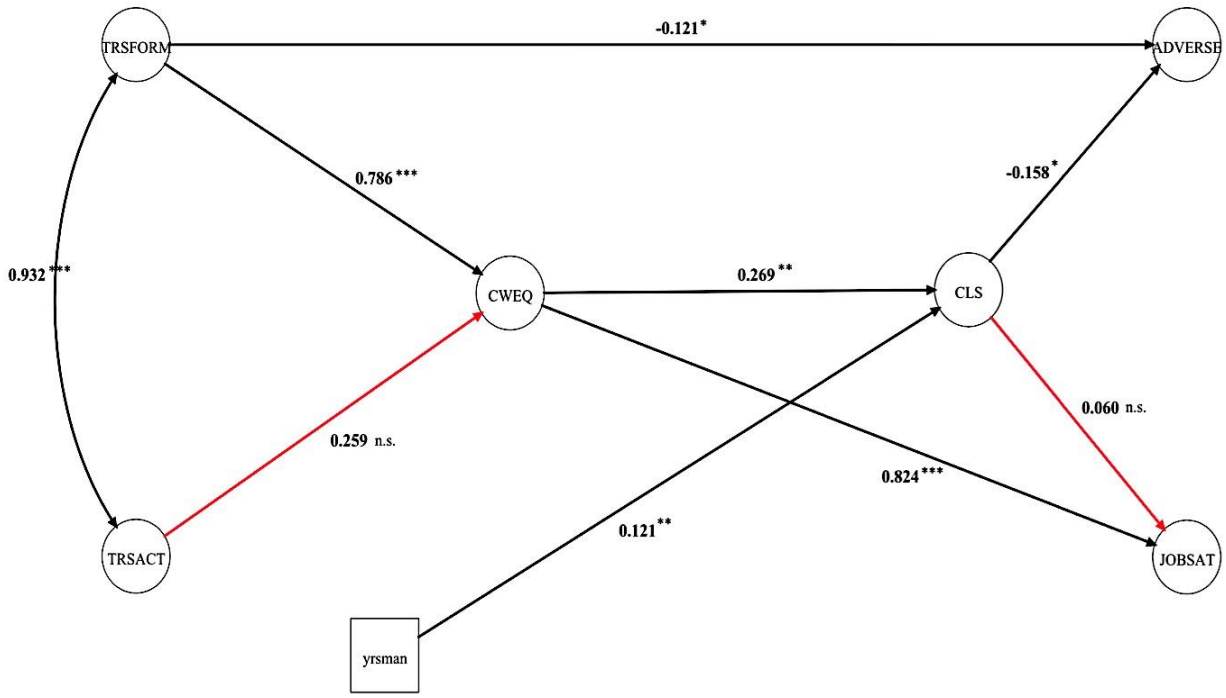


Note. *p< .05, **p< .01, ***p< .001; n.s. = non-significant path. Faded red lines indicate the additional paths

A review of the standardized estimates and modification indices of the revised model revealed that the hypothesized effect of transactional leadership on structural empowerment (Hypothesis 1a), and staff nurse clinical leadership and job satisfaction (Hypothesis 4) were not significant; thus are not supported. Byrne (2010) suggests that in the interest of scientific parsimony, a final model should be estimated with non-

significant paths/ parameters deleted from the model. Once trimmed of all non-significant paths in a stepwise fashion (see Appendix K), the final model (see Figure 7) yielded acceptable fit: χ^2 = 959.309, *df* = 428, *p* = 0.001, CFI = 0.915, TLI = 0.908, RMSEA = 0.052, SRMR = 0.053. Table 12 shows the comparison among model fit indices for the initial hypothesized model and final adjusted model.

Figure 7. Final Structural Model of Transformational Leadership and Nurse/Patient Outcomes



Note. TRSFORM= transformational leadership; TRSACT= transactional leadership; CWEQ= structural empowerment; CLS= staff nurse clinical leadership; ADVERSE= nurse-assessed adverse events; JOBSAT= job satisfaction. Standardized coefficients (**p*< .05, ***p*< .01, ****p*< .001). Bootstrap resample = 5000; percentile and bias corrected confidence intervals is on 95 percent. Faded red lines indicate non-significant hypothesized pathways. Years worked with current manager (yrsman) was included in the model as control variable for clinical leadership.

Table 12

Comparison of Model Fit for Hypothesized Model and Final Model

Model	χ^2	*df*	RMSEA	CFI	TLI	SRMR
Initial mediation model	1086.311	370	.067	.885	.874	.138
Revised model (with additional direct paths)	875.689	368	.055	.919	.910	.051
Final model (Figure 7)	959.309	428	.052	.915	.908	.053

p< .001

Effect Estimates (Structural Paths)

Overall, the results provide partial support for the hypothesized model. As predicted, there was a strong and significant direct positive effect of nurse manager transformational leadership on structural empowerment (β = .786, *p*< .001), supporting Hypothesis 1b. Transactional leadership, on the other hand, had no significant direct effect on structural empowerment (β = .259, n.s.), providing no support for Hypothesis 1a. Consistent with Hypothesis 2, structural empowerment in turn, was significantly predictive of staff nurse clinical leadership behaviour (β = .269, *p*< .001). Controlling for years of working with current manager, perceptions of staff nurse clinical leadership was negatively and significantly related to nurse-assessed adverse events (β = -.158, *p*< .05), supporting Hypothesis 3, but clinical leadership did not have an effect on job satisfaction (β = .060, n.s.), providing no support for Hypothesis 4.

In addition to the hypothesized relationships, there was a significant direct negative effect of transformational leadership on nurse-assessed adverse events (β = -.121, *p*< .05). Although not originally proposed, supplemental analysis revealed that structural empowerment had a strong direct positive effect on job satisfaction (β = .824,

$p < .001$). As for indirect effects, transformational leadership had a small significant negative indirect effect on nurse-assessed adverse events through staff nurse clinical leadership and structural empowerment ($\beta = -.034$, $p < .05$). Empowerment likewise positively mediated the relationship between transformational leadership and staff nurse clinical leadership ($\beta = .212$, $p < .001$) as well as nurse job satisfaction ($\beta = .648$, $p < .001$). Structural empowerment had a significant indirect negative effect on adverse events through clinical leadership ($\beta = -.043$, $p < .05$). The estimates of the regression coefficients for the structural paths of the model, standard errors and indirect parameters are shown in Table 13.

Table 13

Estimated Coefficients for Hypothesized Model

Structural paths	***b***	***β***	***SE***	***CR***	***p***
	Direct Effects				
Transformational leadership → Empowerment	.325	.786	.053	6.118	.001
Transactional leadership → Empowerment	.124	.259	.065	1.496	.135
Empowerment → Staff nurse clinical leadership	.215	.269	.056	3.843	.001
Staff nurse clinical leadership → Job satisfaction	.175	.060	.144	1.235	.217
Staff nurse clinical leadership → Adverse events	-.230	-.158	.112	-2.168	.030
Empowerment → Job satisfaction	1.953	.824	.377	5.174	.001
Transformational leadership → Adverse events	-.064	-.121	.031	-1.992	.046

Structural paths	*b*	*β*	*SE*	*CR*	*p*
	Indirect Effects				
Transformational leadership → Empowerment → Staff nurse clinical leadership	.070	.212	.046	4.578	.001
Transformational leadership → Empowerment → Job satisfaction	.635	.648	.033	19.352	.001
Transformational leadership → Empowerment → Staff nurse clinical leadership → Adverse events	-.016	-.034	.017	-1.968	.049
Transactional leadership → Empowerment → Staff nurse clinical leadership	.037	.124	.065	1.905	.057
Transactional leadership → Empowerment → Staff nurse clinical leadership → Adverse events	-.012	-.025	.016	-1.544	.123
Empowerment → Staff nurse clinical leadership → Adverse events	-.050	-.043	.021	-1.961	.049

Note. *b* = Unstandardized Coefficient, β = Standardized Coefficient, *SE* = Standard Errors, *CR* = Critical Ratio, $p < .05$

The effect size estimates for each dependent variable are summarized in Table 14. The predictor variables (transformational leadership, structural empowerment and staff nurse clinical leadership) accounted for a significant amount of the variability (68% of the variance) in nurse job satisfaction with structural empowerment as the stronger predictor ($\beta = .824$, $p < .001$). Using the same control variable (years of working with manager), nurse-assessed adverse patient events was explained by the predictor variable ($R^2 = .048$, $p < .01$).

Table 14

Predictors of Nurse and Patient Outcomes

Dependent Variable	Independent Variable	*b*	*β*	R^2
Nurse-assessed adverse events				.048**
	Transformational leadership	-.064	-.121*	
	Staff nurse clinical leadership	-.246	-.158*	
	Years of working with manager	.008	.121**	
Job satisfaction				.679***
	Structural empowerment	1.951	.824***	
	Staff nurse clinical leadership	.175	.060	

Note. *p< .05, **p< .01, ***p< .001; b = Unstandardized Coefficient, β = Standardized Coefficient

Summary of Overall Findings

In this chapter, the results of this research including a description of the sample, an evaluation of each of the latent variables using CFA, and a test of the full study model were presented. The sample consisted of three hundred and seventy eight acute care nurses across Ontario. In general, the demographic profile is similar to the provincial sample of nurses working in acute care hospitals.

This study addressed a number of key theoretical propositions through hypothesis testing. Structural equation modeling was the primary method used to test the research hypotheses and model fit indices, and path coefficients provided support for majority of the theorized relationships among variables in the model. Although moderation was not supported, transformational leadership behaviours of nurse managers was found to have a strong significant influence on nurses' structural empowerment. Nurses' perception of their managers' transformational leadership behaviours inversely impacted frequency of

adverse patient outcomes indirectly through structural empowerment and staff nurse clinical leadership. Contrary to expectations transactional leadership accounted for a small non-significant direct effect on structural empowerment. The presence of structurally empowering workplace factors significantly impacted staff nurses' use of clinical leader behaviours in their practice, and nurses' job satisfaction. The results showed that nurses' use of clinical leadership behaviours had no direct influence on their job satisfaction. Rather, the use of clinical leadership resulted in nurses' report of fewer reports of adverse patient outcomes. A more detailed discussion and summary of the findings of the research are discussed in Chapter 5.

Chapter 5

Discussion and Recommendations

The purpose of this chapter is to summarize the study and discuss how the findings relate to current research literature on leadership, and offer recommendations for future work. This study was conducted to investigate the relationships between transformational leadership, the quality of the nurses' work environment and its impact on nurse and patient safety outcomes. The chapter is divided into three sections: (a) analysis of findings which is proceeded by a general overview of the study, (b) implications of the study, and (c) recommendations for future research. The chapter then concludes with study limitations and a description of the knowledge translation plan and the overall study conclusion.

Overview

In tandem with the substantial body of literature that highlights the benefits of transformational leadership for employees and the organization (Bycio, Hackett, & Allen, 1995; Judge & Piccolo, 2004), the present study sought to advance our knowledge of transformational leadership as it relates to nurse and patient outcomes. This research assesses how nurse managers' use of transformational and transactional leadership behaviours influence nurse job satisfaction and adverse patient outcomes in acute care hospitals in Ontario. Understanding how transformational leadership influences key nurse and patient safety outcomes is crucial to developing health policy that informs nursing practice and improves patient care quality within Canadian healthcare settings. The purpose of this research was to test a theoretical model that explains staff nurse perceptions of the impact of their managers' transformational and transactional leadership

behaviours, the quality of the nursing work environment, nurses' perception of their clinical leadership practices at the bedside, and ultimately, the effect on their job satisfaction, and frequency of adverse patient outcomes. Using structural equation modeling, the hypothesized relationships among the key constructs were tested simultaneously and the results partially supported the relationships presented in the model.

The goals of this study were two-fold. The first goal was to establish the underlying process/ mechanism through which transactional leadership influence nurses' job satisfaction and adverse patient outcomes by focusing on the mediating role of structural empowerment and staff nurse clinical leadership. The second goal was to test the moderating role of transformational leadership on the relationship between transactional leadership and structural empowerment. The proposed hypothesis that underpinned this study stated that nurse managers who use transformational and transactional leadership behaviours are more likely to create empowering work environments that foster staff nurse clinical leadership behaviours, which in turn, improve nurses' job satisfaction and decrease nurse-assessed frequency of adverse patient outcomes. Overall, there are four key findings. First, the augmentation hypothesis — the notion that transformational leadership adds to the effectiveness of transactional leadership to influence nurse and patient outcomes was not supported. More specifically, transformational leadership did not moderate the relationship between transactional leadership and structural empowerment. Transformational leadership behaviours were associated with fewer occurrences of nurse-assessed adverse patient outcomes indirectly through structurally empowering work environments and staff nurse clinical leadership.

This finding is consistent with the literature and supports the premise that transformational leaders can effect positive change and outcomes by creating positive work environments that enable staff nurses to provide safe quality care. A second key finding is that empowering work environments have direct positive effects on nurses' use of clinical leadership behaviours at the bedside. Third, the findings also indicate that staff nurse clinical leadership is inversely related to nurse-assessed adverse patient outcomes. Last, structural empowerment significantly increased nurses' job satisfaction. These results suggest that empowering workplaces enable nurses to feel more autonomous in their practice and engage in clinical leadership practice behaviours that ultimately lower the incidence of adverse patient outcomes. Overall, the findings from this research underscore the value of transformational leadership styles in transforming the work environment of nurses. Transformational leadership is pivotal in creating empowering practice environments that support professional nursing practice and ensure positive outcomes for patients and nurses. To our knowledge, this study is among the first to directly link transformational leadership to adverse patient outcomes in acute care hospital settings.

Interpretation of Results and Discussion

Transformational and transactional leadership

In this study, the effect of transformational and transactional leadership on job satisfaction and nurse-assessed adverse patient outcomes using mediating mechanism of structural empowerment and staff nurse clinical leadership was investigated. The findings were mixed given that only transformational leadership had significant effects on the outcome variables. This finding is contrary to the original hypothesis and theory (Bass,

1990), and contradicts previous research (Bycio et al., 1995; Judge & Piccolo, 2004) that have examined the augmentation effect of transformational leadership on organizational performance and satisfaction. The non-significant augmentation effect of transformational leadership on transactional leadership and workplace empowerment was unexpected. One plausible explanation for the lack of significance of transactional leadership as an independent predictor of workplace empowerment may be due to the high positive correlation between transformational and transactional leadership in the full model. This suggests that similar to transformational leadership, transactional leadership may also contribute to the creation of structurally empowering work environments but to a lesser extent than transformational leadership. This finding underscores Bass's (1985) claim that effective leaders use a mix of both transformational and transactional styles; however, in this study the impact of transformational leadership on positive outcomes far outweighed that of transactional leadership styles. Transactional leadership is the very structure of leadership that provides the basic tools required for effective management, as well as, the communication of directives to accomplish organizational goals. A transactional nurse leader's focus is on the organization's present status and to ensure that it continues to run efficiently by meeting the important operational needs of the organization such as, providing adequate staffing, resources, and support. The transactional leader acts in conventional ways and give followers clarity about rules and standards to protect the status quo and closely monitor and correct followers' errors to ensure short-term success (Avolio et al., 1999; Bass, 1998). According to Bass and Avolio (1990), the transactional process provides for leadership direction, clarification of processes, and organization of resources. However, it is the transformational leader who

is most effective in unstructured and turbulent environments such as healthcare organization because of the leader's ability to promote innovation, new ideas and raise individuals to higher levels of motivation, effort, satisfaction, and performance (Bass & Avolio, 1990; Hutchinson & Jackson, 2013). Transformational leaders are visionary and seek innovative approaches to transform the work environment by encouraging their followers to sacrifice their interests for the interests of the organization (Bass, 1990). These leaders consider the needs of the followers for advancement, improve their self-esteem, and motivate their followers towards higher levels of performance. As a whole, the results of this study provide a strong theoretical basis for expecting that behaviours of transformational leadership are important to creating empowering work environments that support exemplary nursing practice and impact positive patient outcomes.

The effect of transformational leadership on structural empowerment, clinical leadership and patient safety outcomes

The findings of this study further support theoretical and empirical links between transformational leadership and patient outcomes. Transformational leadership had a significant effect on nurse-assessed adverse patient outcomes through its effect on structural empowerment and clinical leadership. Transformational nurse managers improve patient care quality by creating empowering work environment which enable nurses to feel more autonomous and self-efficacious to take initiatives and use novel approaches to care resulting in better outcomes for patients. These leaders inspire their staff and ensure that they have support and adequate supply of resources needed to provide evidence-based care. The findings of this study are in congruence with prior studies that have linked positive leadership styles, including transformational leadership

behaviours, to patient outcomes and complications. For example, Higgins (2015), in a study of Canadian nurses, found that nurses' perceptions of their managers' transformational leadership behaviours had indirect negative effects on objectively measured adverse events (i.e., patient falls and hospital infections) through a supportive practice environment and organizational citizenship behaviours. A plethora of literature (Capuano et al., 2005; Houser, 2003; Vogus & Sutcliffe, 2007; Wong et al., 2013) has also revealed the positive link between relational leadership style (i.e., transformational leadership) and patient safety outcomes. Wong and Giallonardo (2013) found that authentic leadership was significantly associated with decreased nurse-assessed adverse events through trust in the manager and areas of worklife. Others have shown that transformational leadership supports quality of nursing care and clinical expertise (McGuire & Kennerly, 2006; Tourangeau & McGilton, 2004). As transformational leaders encourage employees to think of alternative solutions for problems (Avolio et al., 1999), they can change their followers' attitudes and perception about the kind and amount of knowledge, abilities and skills that are required for the execution of their jobs. A leader practising transformational leadership emphasizes the benefits of collaboration that create a culture where dialogue is open and new ways of thinking are encouraged. Such leaders empower nurses to solve problems, influence change in practice on their units (Cook, 1999), and take responsibility in the care of patient, and in doing so, may lead to fewer errors.

In this study, nurses perceived their managers as moderately transformational. Notably, the transformational leadership component, inspirational motivation, had the strongest impact on nurse and patient outcomes, while individualized consideration was

the lowest ranked factor. By means of inspirational motivation, transformational leaders communicate high expectations to followers, which inspire them to become committed to and involved in efforts to realize the shared vision in the organization (Avolio et al., 1999; Bass, 1998). Transformational leaders are charismatic and influential in their ability to encourage employees to do more than what is expected of them at work. To achieve success, transformational leaders provide employees with a clear sense of mission, how their work fits with the overall goals of the organization, a sense of commitment to those goals and how to encourage others to follow. In addition, transformational leaders attend to the needs of nurses by acting as mentors and coaches, listening to staff concerns and fostering a supportive environment for individual growth (Bass, 1998). When nurses perceive that their manager is taking interest in their self-development and empowering them to reach their full potential, they become more confident and engaged at work, which ultimately can improve patient care quality (Purdy et al., 2010; Spence Laschinger, 2008).

In alignment with the aforementioned, the findings of this study highlight the direct effect of the leader's own actions (i.e., monitoring, mentoring, and rewarding) on adverse events. Unexpectedly, there was a small direct negative effect of transformational leadership on adverse patient outcomes. This finding is interesting and provides a unique contribution to the literature, as leadership is typically understood to have an indirect effect on organizational outcomes. Most studies (i.e., Aiken et al., 2001; Higgins, 2015; Wong, 2015) have highlighted the impact of nursing leadership on patient outcomes through intervening work environment characteristics. Findings from this study show that in addition to creating an empowering work environment, the behaviour of the leader has

a strong direct effect on nurses' perceptions of the incidence of adverse events, which may translate to the experience of providing patient care. For instance, through individualized consideration, a transformational leader focuses on understanding the needs of each follower and through mentorship provides the knowledge, skills and resources needed for the follower to reach higher levels of achievement. One way by which transformational leaders exercise influence on their followers is by their example (Bass, 1990). Managers who are approachable, accessible and spend time on the unit with nurses may influence staff morale through communication and supporting nurses in resolving problems and providing consultation and feedback on issues related to patient care, thereby minimizing frequency of errors. In this study, about 28% of the nurses reported interacting with their manager at least once or twice a week. The regular interactions between managers and staff nurses create a positive work culture partially through communication and demonstration of the leader's own strong values. Transformational leaders demonstrate behaviours worth emulating in their day-to-day interactions with staff (Yukl, 2010), which facilitates leader visibility, trust and motivation. Past studies (Aiken et al., 2001; Kleinman, 2004; Upenieks, 2003) have shown that leader visibility is an important characteristic of leadership as it encourages open communication and support to nurses in the provision of quality care through high standards and strong relationships with staff.

The effect of transformational leadership on job satisfaction through empowerment

The results suggest that the effects of transformational leadership on nurses' job satisfaction are mediated by a number of factors, including access to empowering working conditions that support professional nursing practice. The findings of this study

highlighted the importance of transformational leadership in creating environments that provide structures that empower nurses to accomplish their work. According to the adjusted model, transformational leadership had a strong direct effect on structural empowerment. This finding supports the previous work of Laschinger, Wong, Grau, Read, and Pineau Stam (2011) who examined Kouzes and Posner's model of transformational leadership and found that transformational leadership styles of nurse managers had significant positive impacts on structural empowerment in the workplace. In a similar study by Patrick et al. (2011), manager's leadership practices were a significant and positive predictor of staff nurse structural empowerment. Empowerment is one of the most widely discussed influences transformational leaders have on followers (Thomas & Velthouse, 1990; Yammarino, Spangler, & Bass, 1993), and is often an important element of focus for healthcare organizations. Past studies (Attari, 2013; Morrison et al., 1997) linking transformational leadership to empowerment focus on another concept of empowerment from a psychological perspective. Psychological empowerment is achieved by promoting employees' belief about the meaning of their work and their sense of self-determination (Spreitzer, 1995). Previous literature has shown that psychological empowerment is an outcome of being in structurally empowering work environments (Boonyarit, Chomphupart, & Arin, 2010; Manojlovich & Laschinger, 2002; Purdy et al., 2010), which in turn, has been shown to decrease job strain and increase job satisfaction (Laschinger et al., 2001).

Despite the growing interest among researchers in exploring the empowering nature of leadership (Attari, 2013; Özaralli, 2003), there was scant evidence that highlights how transformational leadership affects structural empowerment (see Menon,

2001). It is important to note that this current study was among the first to relate Bass and Avolio's model of transformational leadership to structural empowerment in a sample of nurses. This study makes a unique contribution to the nursing and leadership literature given the nascence of the concept of transformational leadership and structural empowerment in health settings.

In this study, nurses reported moderate levels of empowerment in their workplace, which was similar to perceptions of empowerment reported in other studies with Ontario nurses (see Laschinger, Leiter, Day, & Gilin, 2009; Pineau Stam et al., 2015). In the current study, nurses' perceptions of structural empowerment strongly predicted their job satisfaction. This finding supports Kanter's theoretical proposition that access to structural factors in the organization is foundational in shaping and improving employee attitudes and behaviours and productivity. The results suggest that when nurses have access to information (i.e., clinical quality measures, budget and financial information) and influence over resources supporting practice and ability to participate in organizational decisions, it encourages the use of clinical leadership practices at the bedside thereby, contributing to job satisfaction. More profoundly, the strong and direct relationship between staff empowerment and nurse job satisfaction indicates that enhancing the quality of the work environment may be the most important retention strategy. This is in line with previous research (Lautizi, Laschinger, & Ravazzolo, 2009; Pineau Stam et al., 2015; Wong & Laschinger, 2012), in which structural empowerment influences nurses' job satisfaction, organizational commitment (Laschinger, Finegan, & Wilk, 2009; Manojlovich & Laschinger, 2002), work engagement (Boamah & Laschinger, 2014), lower levels of burnout and job strain (Laschinger et al., 2001), and

turnover intentions (Cai & Zhou, 2009; Laschinger et al., 2009), all of which impact recruitment and retention of nurses.

Contrary to other studies (Pineau Stam et al., 2015; Sarmiento, Laschinger, & Iwasiw, 2004), the nurses in this study perceived that their access to resources had the greatest contribution to their job satisfaction among all the components of structural empowerment, followed by opportunity, support and information. This means that availability of resources is especially important for nurses be efficient and effective as it provides access to the materials, time and equipment required to accomplish organizational goals and be satisfied at work. The components, which made less of a contribution to nurses' level of job satisfaction, were their perceptions of access to information and rendering of support. This may be a reflection of the fast-paced nature of the nursing work environment and the wider span of control, which hinder managers' ability to offer on-going communication and connect meaningfully with their staff in order to provide the support they need to be effective (Lucas, Laschinger, & Wong, 2008; Young-Ritchie et al., 2009). On the contrary, one could argue that having access to information and technical knowledge and expertise to do the job, and the sufficient resources and support, particularly from supervisor, together foster confidence, a sense of community and collegiality among staff, which promotes satisfaction at work.

Overall, the findings confirmed moderate levels of job satisfaction among nurses, which is also consistent with previous findings in the general nursing population (Laschinger et al., 2004; Lautizi et al., 2009; Pineau Stam et al., 2015). In the current study, 55% of nurses reported varying degrees of satisfaction with work, which is similar to Cortese (2007) who found that 54% of Italian nurses were satisfied with their jobs.

Similarly, Lu, While, and Barriball (2007) found that 54% of nurses in Beijing were satisfied at work, meanwhile Duffield et al. (2010) in a sample of 1,559 Australian nurses, found that around 67% were satisfied with their job. These results indicate the need for healthcare leaders to consider ways to sustain and improve nurses' job satisfaction, as it is a major factor in nurse retention and the delivery of high quality care (Laschinger et al., 2009).

The findings of this research demonstrated the effect that transformational leaders have on nurses' job satisfaction through the leader's ability to create structurally empowering work environments for staff to be efficient and effective at work. This finding is consistent with transformational leadership theory, which highlights the role of the leaders in providing employees with supportive work environments that promote work effectiveness (Bass, 1998). By engaging in transformational leadership behaviours nurse managers may increase nurses' perceptions of their work experience by encouraging open communication, engaging staff in decision-making, paying attention to their staff by acting as mentors and coaches and providing opportunities for them to achieve and grow. By developing positive leader-follower relationships, transformational leaders are able to understand and anticipate the needs of their staff and make an effort to influence the acquisition of resources needed to increase nurses' feelings of empowerment. Managers perceived as transformational are more likely to cultivate environments in which staff nurses have access to structural factors (i.e., support, resources) necessary to accomplish their work. In turn, nurses feel supported and autonomous and have greater discretion over their work, as well as empowered to seek innovative approaches to perform their job and thereby, generating a greater sense of job

satisfaction. This result is concordant with previous studies showing distinctive patterns between transformational leadership and work outcomes such as job satisfaction (Bormann & Abrahamson, 2014; Casida & Parker, 2011), work engagement (Hayati et al., 2014), and organizational commitment (Avolio et al., 2004; Cummings et al., 2010; McNeese-Smith, 1995). McCutcheon et al. (2009) reported similar findings in a sample of Canadian acute care nurses. Similar results have been reported among Ethiopian (Negussie & Demissie, 2013), Jordanian (Abdelhafiz et al., 2015), and Taiwanese nurses (Lin, MacLennan, Hunt, & Cox, 2015). These findings highlight the importance of nurse managers spending time to meaningfully engage staff by openly listening to their concerns, and providing support through mentorship and coaching as well as feedback on performance for nurses to feel engaged and satisfied at work.

The effect of structural empowerment on clinical leadership

An important contribution of the present study is the direct significant relationship found between structurally empowering work environments and staff nurse clinical leadership behaviours. This is an important finding because very few empirical studies have reported this relationship. To our knowledge, only one other study, by Patrick et al. (2011), has shown a direct positive effect of structural empowerment on staff nurse clinical leadership. Consistent with Patrick et al.'s study, all dimensions of structural empowerment were positively related to the clinical leadership subscales. The information empowerment structure had the strongest relationship with the Inspiring a Shared Vision and Enabling Others to Act clinical leadership behaviours. This is not surprising because when nurses have the technical knowledge and expertise required to be effective at work, they feel empowered, which in turn enables them to effectively

communicate and inspire colleagues to practice at higher levels of expertise (Roche, Morsi, & Chandler, 2009), and share with them a more comprehensive approach to achieve better patient care goals (Kramer & Schmalenberg, 2004). The relationship between structural empowerment and clinical leadership is logical because working in empowering environments enable staff nurses to have greater control over their work (Armstrong et al., 2009; Patrick et al., 2011), think critically, use sound judgment and make clinical decisions based on their knowledge and expertise in accordance with professional nursing standards to achieve the best outcomes for patients (Kramer & Schmalenberg, 2004). Workplace empowerment has also been shown to be an important predictor of nurses' autonomy, perceived control over practice (Laschinger et al., 2004), and participation in decision-making (DeCicco, Laschinger, & Kerr, 2006). A positive nursing environment supports clinical leaders in their role by fostering autonomous practice and providing confidence to challenge the status quo, think critically and use evidence-based practice to collaboratively influence the practice of others in the delivery of care (Carney, 2009; Patrick et al., 2011). Manojlovich (2005) found that nurses who perceived their managers to be strong leaders also perceived their work environments as empowering, which in turn, led to their use of professional practice behaviours. These professional practice behaviours such as collaboration, effective communication, and interpersonal understanding are consistent with core attributes of clinical leadership (Patrick et al., 2011).

The effect of clinical leadership on patient safety outcomes

A unique contribution of this study is the significant effect of staff nurse clinical leadership on nurse-assessed adverse events. In this study, staff nurses' reported that they

use clinical leader behaviours in their practice most of the time, which led to fewer reports of adverse events. To the best of our knowledge, this is the first study to demonstrate a link between structurally empowering work conditions and staff nurse clinical leadership, and its subsequent influence on adverse patient outcomes. This is a novel finding because despite the widespread recognition of the importance of effective clinical leadership to healthy environments and patient outcomes (Cummings et al., 2010; Fealy et al., 2011), there is no empirical research undertaken to assess the outcomes of clinical leadership among staff nurses. According to Cook (2001), clinical leadership is crucial to the success of patient care outcomes. Clinical leaders are seen as effective communicators, empowered, open and approachable, and decision-makers who use interpersonal skills to deliver quality patient care (Cook, 2001). These attributes of clinical leadership are represented in the characteristics and qualities identified in transformational leaders, which makes transformational leadership theory an important leadership theory for understanding and developing future clinical nurse leaders.

In the present study, staff nurses reported higher level of leadership skills in all five dimensions of clinical practice, and in particular, for the Modeling the Way clinical leadership practice. This is consistent with Kouzes and Posner's leadership model, which suggest that serving as role models and setting an example by clarifying values and sustaining commitment results in the effectiveness of the leader. Clinical leaders model the way by setting good examples for junior staff, clearly articulate professional standards and share their knowledge and expertise with colleagues and patients (Ennis, Happell, & Reid- Searl, 2015; Patrick et al., 2011). Studies have identified these clinical behaviours as professional practice behaviours (Manojlovich, 2005; Roche et al., 2009),

which results in better patient outcomes. Effective clinical leadership is important in ensuring safe, effective quality care (Mannix, Wilkes, & Daly, 2013; Pettorini-D'Amico, 2014). The attributes of clinical leadership include the ability to inspire and empower colleagues and others to advocate for high quality care by sharing information necessary for comprehensive care (Casey et al., 2011). In this study, all dimensions of structural empowerment were positively related to the Inspiring a Shared Vision attribute of clinical leadership practice. Staff nurses' Inspire Shared Vision by helping the teammates make clinical decisions (Rath & Conchie, 2008), and in doing so, promotes safe, patient-centered outcomes. This means that in supportive work environments, staff nurses are more likely to inspire a more comprehensive approach to patient care through effective communication, collaboration with other healthcare professionals, advocating for patients, and questioning the status quo especially if they perceive that patients' wellbeing is at risk. Empowering work environments enable staff nurses to discover their voice and use their power and influence to enhance workplace relations among colleagues and create standards of excellence to achieve patient care goals.

Interestingly, despite the theoretical reasoning for expecting that clinical leaders would be more satisfied at work, this relationship was not supported in the current study. Surprisingly, staff nurse clinical leadership was not related to job satisfaction. One possible explanation for the lack of effect may be that there is a definitional uncertainty of the concept of clinical leadership (Daly, Jackson, Mannix, Davidson, & Hutchinson, 2014), and the use of the concept in the staff nurse context is relatively new (Chávez & Yoder, 2014). As a result, it might be that staff nurses' understanding of the essential attributes of clinical leadership is scarce, thereby limiting their perceived influence of

clinical leadership on job satisfaction. Although the results did not have significant power to link staff nurse clinical leadership to job satisfaction, given that no other study has tested this relationship it is likely that staff nurse clinical leadership could be a possible mechanism through which structural empowerment has an impact on job satisfaction, thus warranting further study.

Summary

In summary, the findings of this study underscore the important role that transformational leaders play in enhancing the quality of the work environment for nurses to produce better outcomes for patients. The study extends transformational leadership theory by capturing structural empowerment and clinical leadership as mechanisms by which transformational leadership behaviours of nurse managers engender positive outcomes in acute care hospitals. Study findings show that transformational leadership impacts adverse patient outcomes directly and indirectly through structural empowerment and clinical leadership. Findings from this study suggest that strong nursing leadership is paramount for improving patient safety.

Implications of Study Findings

Theoretical contributions/ implications

The current study contributes to the transformational leadership literature in the following ways. First, researchers contend that in order to fully understand how leadership produce desired outcomes, it is important to explore the variety of mechanisms/ processes through which leadership influences employee behaviour and performance (Bass, 1999; Yukl, 2010). In this study, the use and combination of

conceptual frameworks of Bass's transformational leadership theory and Kanter's theory of structural empowerment proved to be very helpful in eliciting a nuanced understanding of how transformational leadership influences structural factors that impact nursing care processes, and hence, nurse and patient safety outcomes. By integrating these theories into the proposed framework, the findings provide an in-depth understanding of the system factors (i.e., administration and work environment), which have potential relevance for quality of care and patient safety. The evidence from this study adds to the theoretical basis for extending transformational leadership theory to incorporate structural empowerment and clinical leadership as mediators in the relationship between transformational leadership and nurse and patient outcomes. Second, a contribution of this study to nursing science includes the test of augmentation effect in a sample of nurses and examination of a moderated-mediated model to assess leader-follower relationship processes and outcomes of significance to nurses, patients and organizations. It is noteworthy that, in the extensive literature about transformational leadership, a clear absence of investigations of this kind was observed. As far as we know, this is the first study linking transformational leadership and structural empowerment to staff nurse clinical leadership, job satisfaction and nurse-assessed adverse patient outcomes. The findings supports previous studies (Higgins, 2015; Laschinger et al., 2011; Wong et al., 2013) that conclude that transformational leadership is instrumental in influencing nurse and patient safety outcomes.

The findings in this study provide further support for the importance of Kanter's theory of structural empowerment in producing positive outcomes for healthcare organizations. The results further validate the mediating role of empowerment in

fostering quality patient care and nurses' work effectiveness and productivity. Kanter's theory offers guidance for managers on how to create and maintain satisfying healthy work environments that open access to structural factors that support professional practice and achieve high standard of care. This study adds to the nursing knowledge base showing the positive influence of transformational leadership in facilitating nurses' access to information, support, resources and opportunities to learn and grow. Consistent with other studies (Laschinger & Leiter, 2006; Laschinger, 2012; Pineau Stam et al., 2015), structural empowerment creates the platform on which staff nurses feel empowered and satisfied at work, and facilitate their use of clinical leadership behaviours to provide high quality care.

Implications for nursing practice and administration

The current study has practical implications for nurse managers and healthcare organizations. The strongest implication that can be drawn from the findings of this study is that workplace empowerment is a key outcome in the effectiveness of the transformational leader. This would imply that for a transformational nurse manager to succeed in translating his/her vision for the organization into reality, he/she must transform bureaucratic work environments into professional, autonomous practice environments (American Nurses' Association, 2009). In practical terms, this means that the manager needs to develop a work environment that fosters transformational leadership through his or her own behaviours and values and should role model those behaviours for nursing staff to emulate. The application of transformational leadership theory can guide managers to create practice environments that encourage innovation and

creativity as well as access to resources and support needed for delivery of high quality nursing care and staff satisfaction.

It emerged from this study that nurse managers who exhibit transformational leadership qualities in their work environments strongly influence patient and nurse outcomes. The primary goal for health care leaders set forth by the IOM is to reduce adverse patient outcomes and transform the healthcare system (2004). To achieve this goal, organizations require strong leadership on the part of nurse managers to devise and implement the changes necessary to increase quality, access, and delivery of patient-centered care. According to the transformational leadership theory, the leader who is charismatic, inspirationally motivating, intellectually stimulating, and provides individualized consideration raises the aspirations and motivations of others to pursue high standards and optimize performance in the delivery of care. These four components of transformational leadership should be taught and encouraged through mentorship as a management strategy for existing and prospective managers. Transformational nurse leaders need to teach leadership skills to aspiring managers and support the educational process through a mentoring relationship. Managers must be encouraged to focus on the cognitive, emotional, and social aspects of the transformational leadership process whereby leadership motivates followers to achieve the goals of the organization (Bass, 1990).

It is evident from this study that there is need to improve training of nurse managers to express transformational leadership attributes, such as creating a shared vision for their unit, inspiring and motivating staff to assume more responsibility and take greater ownership of work outcomes, and mediating between the individual's needs and

organizational demands. Strategies to enhance patient outcomes may require the development of managers' understanding of transformational leadership and how to develop leadership abilities of their staff through effective communication, collaboration and listening skills. In this context, managers need to provide the appropriate resources and guidelines by which these goals can be achieved. Beyond the benefits derived from integrating leadership in the training agenda for managers, the components of transformational leadership can be used to provide leaders feedback on their performance or guide self-reflection, which is likely to be far more effective.

A recurring message from this study is that transformational leadership plays an important role in creating a culture in the work environment in which staff nurses have access to empowerment structures. Creating a greater sense of empowerment will foster healthy working conditions that will enable staff nurses' to use their professional knowledge and expertise in the clinical decision making to reduce the likelihood of error and increase the level of safety for patients in their organizations.

Implications for nursing policy

The complexity of the health care system makes it imperative for hospital administrators, nursing educators, and policy makers to collaborate on ways to transform practice environments to meet the demands of patients, nurses, and the organization. Policies that favour transformational leadership and collaboration in the work environment should be vigorously pursued. In light of the study findings, it is apparent that organizational policies directed at human resource issues such as manager competencies, leadership development and performance evaluation should be refined to reflect the need for managers to practice transformational leadership. It is essential for

healthcare organizations to encourage transformational leadership through organizational and human resource policies to ensure the benefits accrue to all levels of the organization. It is imperative to develop nurse leaders, and for nurses to serve as full partners with other healthcare professionals on advisory boards on which policy decisions are made to advance health systems and improve patient care (IOM, 2010). It is also needful to engage and empower stakeholders to support legislation, which aims to improve healthy work environments for registered nurses (Porter-O'Grady, 2011). For instance, at the system level, the Ministry of Health and Long-Term-care Ontario, in collaboration with the Registered Nurses Association of Ontario and Health Canada Office of Nursing Policy have developed a conceptual framework for Healthy Work Environments (RNAO, 2013). To improve the sustainability of such an initiative, organizations can access and implement these guidelines in order to create, promote, and maintain healthier work environments for nurses and patients. The findings of this study impinge on practice environments as they have policy implications regarding the empowerment, utilization, and leadership of managers and staff nurses.

Transformation of the healthcare delivery system demands a new way of thinking, fresh perspectives, creative strategies, and informed decision making (Varkey & Antonio, 2010). The results of this study suggest that organizations need to encourage a transformational shift in the conceptualization of leadership — one that places the frontline staff and clinicians as important part of the leadership team within organizations. This is consistent with previous studies (see CIHI, 2016a; IOM, 2004). While designated leaders in position of formal authority within hospitals play a key role in espousing values and mission, such leaders are limited in their capacity to respond to

the needs of patients at the bedside. On the other hand, staff nurses are involved at all points of care, which make their perspective a valuable source of information. Therefore, organizations need to have strong clinician representation at all administrative levels to provide input into decision making. There needs to also be a policy agenda directed at institutionalizing clinical leadership as a core value system in organizations.

Lastly, the moderate but non-significant effect of transactional leadership on structural empowerment suggests that transactional leadership could also contribute to the creation of empowering work environments. It is therefore, essential for managers to engage in transactional exchange processes with their subordinates in order to get the job done. In particular, the use of contingent rewards (i.e., recognition for good performance) is important in maintaining staff morale and loyalty and ensuring that work is of high quality. Within work environment, a reward scheme could be established to reward and formally recognize the achievements of staff as they exhibit the ideals/attributes that the organization espouses. In addition, transactional leadership style can have a positive impact on policy based on the structure and adherence to goals achieved through rewards.

Implications for nursing education

To ensure that nurses are ready to assume leadership roles in healthcare settings, leadership-related competencies need to be embedded at all levels throughout nursing education. Leadership is an art; as such, it incorporates specific skills that can be taught. The IOM report (2010), *The future of nursing: leading change advancing health*, emphasizes the need to reform nursing education through the development of evidence-based, creative teaching-learning approaches which enhance the student nurse's clinical reasoning and leadership skills in patient care situations. Ultimately, the responsibility of

leadership training must be shared equally by academia and nursing practice. The primary recommendation for academia is to develop a curriculum that builds transformationlal leadership competencies at the undergraduate through graduate levels through both didactic and clinical components of education (IOM 2010). The present study findings showed that formal and clinical leadership skills are necessary for nurses to practice efficiently and provide safe, quality care to patients and families. Therefore, attributes of clinical leadership, guided by transformational leadership theory, could be included in theory-based courses and practicum during undergraduate and graduate programs. In addition, employers should ensure that new graduates/ hires who are unfamiliar with concepts of leadership are provided with training. For instance, clinical leadership can be threaded into new employee orientation and simulation programs where real-life case scenarios can be explored. Attributes of clinical leadership enable staff nurses to develop the knowledge, skills, and attitudes necessary to provide evidenced-based, high quality, and patient-centered care. Healthcare organizations should improve in-service leadership training for nurse managers by focusing on transformational leadership characteristics and attributes such as dynamism, inspiration, self-confidence, emotional intelligence, symbolism, coaching and mentorship (Avolio & Bass, 1988; Kouzes & Posner, 1995). Such leadership training programs can be an effective intervention for developing transformational leadership characteristics and changing transactional leadership attributes used by managers in their day-to-day work. For instance, new managers who may have difficulty applying transformational leadership approaches can collaborate with a more experienced peer. Promoting a peer-mentoring culture may positively influence the organization to put into practice the concepts of

transformational leadership and structural empowerment, which benefits employees as well as the patients.

Limitations of the Study

As with any empirical investigation, this study is bound by certain limitations in relation to study design, analysis, and generalizability. First, the cross-sectional design limits the establishment of cause-and-effect relationships and does not allow inference of causality (Polit & Beck, 2012), making it difficult to dismiss alternative explanations for the observed relationships. Theoretically, transformational leadership has been defined as an antecedent of workplace outcomes (i.e., follower satisfaction and trust in the leader) (Bass & Avolio, 1994); however, given the design of the present study it may be challenging to rule out the possibility that other forms of leadership may contribute to perceptions of transformational leadership. Second, cross-sectional approaches to mediation typically generate biased parameter estimates because such designs offer a snapshot of a single moment in time and are unable to establish temporal sequence between cause and effect. However, this can also occur in estimating longitudinal mediation parameters even under the ideal situation when mediation is complete (Maxwell & Cole, 2007).

Another limitation is related to data collection and the unit of analysis. The data for the current study were collected at an individual level and the empirical tests of the hypotheses were conducted on self-report survey data. The use of individual-level data can be problematic because it exclusively examines exposures and responses of individuals, which limits their power (Haneuse & Bartell, 2011), and suggests that much could be learned from contextual comparisons. Group-level or contextual data, which

examines exposures and responses of aggregates or clusters of individuals, such as locales or organization may be needed to complement individual-level data.

Additionally, the use of self-report measures have potential for response bias, which according to Spector (2006), involve a systematic tendency to respond to a range of questionnaire items on some basis other than the specific item content (i.e., what the items were designed to measure). Lack of credibility due to biased responses is a major issue because it could impede the validity of the self-report as a measure. Further, reliance on self-report for the measurement of both the independent and dependent variables raises concern about the validity of causal conclusions for a range of reasons, including systematic response distortions, common method variance (i.e., monomethod bias), and the psychometric properties (reliability and validity) of the questionnaire scales (DeGroot et al., 2000; Podsakoff et al., 2012). The issue of common method variance (CMV) is generally raised when self-report, cross-sectional studies are performed (Spector, 2006). This is the potential bias that emanate from the way the variables are measured. CMV occurs when variance is attributed to the method of measurement rather than to the constructs being measured and thus introduces systematic error variance into the measure constructs (Podsakoff et al., 2012). This systematic measurement error is problematic because it threatens internal validity of the study and provides an alternative explanation for the observed relationships independent of the hypotheses (Podsakoff et al., 2012). Despite the precise measurement of constructs in this study, the subjective or perception-based assessment (i.e., the use of nurse reports of adverse patient outcomes) represents only an estimate of adverse events, which might be subject to bias. For instance, factors such as the unit culture, inaccurate knowledge and incorrect beliefs

regarding adverse events may influence nurses' perceptions in reporting adverse events. Therefore, inclusion of multi-source data such as objective ratings of actual patient outcomes could lessen this risk and add to the findings of this study. Owing to these limitations, steps were taken to reduce these biases in the design of the study by selecting the most valid and reliable measures, protecting respondent anonymity and reducing evaluation apprehension, and improving scale items to eliminate ambiguity.

Self-rating of leader effectiveness is often subjected to overestimation of their personal effectiveness. Nurses rated themselves fairly high in terms of their use of clinical leadership behaviours at the bedside, and this is consistent with reports in the literature that average self-ratings tend to be higher than others' ratings (Atwater & Yammarino, 1992). A further limitation of the present findings is that the clinical leadership scale (CLS) used in this research, developed by Patrick et al. (2011), has not been sufficiently validated. To our knowledge, this is the second empirical study to establish construct validity of the CLS in a CFA analysis. Two subscales of the clinical leadership construct (i.e., Challenging the process, and Modeling the way), and the total transactional leadership scale had low Cronbach alpha values ($\alpha < 0.70$). Given that Cronbach's alpha depends on the number of items on the scale and the tendency to over-or-under-estimate scale reliability, composite reliability was conducted because it may lead to higher estimates of true reliability (Hair et al., 2011). Notwithstanding the limited use of this scale in nursing studies, the CLS demonstrated an acceptable reliability and validity.

The specified study context, acute care hospital cultures, may be more conducive to transformational leadership styles than other settings where managers are more

constrained by organizational hierarchies that might be more limited in their ability to engage in transformational leadership behaviours (Gabel, 2013). Moreover, the CNO data are only as current as the previous year's registration leading to the possibility that some nurses may have been missed, and others not listed because they indicated on their registration form that they did not want to participate in any research. For these reasons, the findings can only be cautiously generalized to nurses working in acute care settings in the province of Ontario but limits the generalizability of the results to nurses employed in other settings.

Finally, although the sample was representative of nurses in the province with respect to age, experience, and level of education, only 38% of the sample responded to the survey. In anticipation of lower response rates commonly associated with mail surveys particularly among healthcare professionals (Cho, Johnson, & VanGeest, 2013), measures were taken to promote responses (Dillman, Smyth, & Christian, 2014). This study also used a random sample of nurses working in acute care hospitals to decrease potential differences between responders and nonresponders.

Recommendations for Theory and Future Research

With the dynamics of today's healthcare environment, leadership must constantly evolve to remain a useful strategy to achieve organizational goals. Throughout the development of this research, it is apparent that there are some areas that seem to reflect a need for further study. The first recommendation for future research is replication of the current study and refinement in terms of specific settings for health care delivery (i.e., community), and national sample that include more diverse nursing populations and geographical locations across Canada and beyond. The goal of future research is to better

understand the theoretical concept of transformational leadership in nursing and its effect on clinical outcomes and workplace quality.

Second, more empirical evidence is needed to validate the findings of this study using objective measures of patient outcomes, and data collection at the unit level. According to the Canadian Institute for Health Information, we still do not know the scope of adverse events in health care institutions in Canada therefore, future studies should assess the number of near misses and errors that occur in hospitals (i.e., collected from administrative or regulatory database) to quantify the patient care impact of structural (i.e., work environment, staffing), and cultural (i.e., teamwork, interprofessional collaboration) changes, and to make comparisons among differing types of acute care hospitals. Further research including hospital-and unit-level variables would need to be completed to demonstrate whether these findings are generalizable or if they are dependent on the particular patient care units studied. Using a multi-level modeling approach (i.e., hierarchical linear modeling) may provide a focus and sensitivity at the unit level and result in an additional understanding. A multi-level analysis takes into account the social contexts (unit-level) as well as the individual responses.

Future research should use an integrative framework to develop a thorough understanding of the effect of leadership on nurse and patient outcomes. Controversies about the nature of leadership are often related to the debates about the appropriate research methodology. Yukl (2010) suggests that as a result of the limitations of both quantitative and qualitative research different approaches should be used in research on leadership. Qualitative methods could assist in evaluating how nurse managers' leadership behaviours influence nurse and patient outcomes, and also provide further

support to the use of transformational leadership in hospital settings and at all levels of an organization.

In light of the unanticipated findings from this study, future studies should continue to explicate the role and contribution of transformational leadership on transactional leadership in the nursing practice environment and ultimately patient outcomes. The moderate but non-significant effect of transactional leadership on structural empowerment suggests that more research is needed to fully understand the effects of transactional leadership on nursing work environments.

Additional research is needed for the purpose of defining and developing the concept of clinical leadership. Subsequent research should focus on the development of staff nurse clinical leadership in hospitals as a way of extending and deepening understanding of the transformational leadership process. For example, researchers might wish to explore the attributes of clinical leadership and how it manifests at the bedside. This is vital because self-leadership may be difficult for people to assess especially if it is perceived as part of nursing competence. Fear of being branded incompetent might discourage novice nurses from providing accurate evaluations. Further testing and validation of the clinical leadership scale may contribute to greater understanding of the concept and how it impacts professional nursing practice.

Finally, a longitudinal study design would allow the researcher to examine the impact of practice changes on nurse and patient safety outcomes. Intense observation of the study subjects over an extended period of time would give researchers the opportunity to look at variations in leadership. For example, do managers change their use of transactional and transformational leadership behaviours over a defined period of time,

and what impact does this change have on organizational effectiveness? Research designed to answer these questions could potentially make an additional contribution to the field.

Knowledge Translation (Dissemination and Application of Results)

Findings from this research contribute to the transformational leadership, empowerment, clinical leadership and patient safety literature. The knowledge gain from this research could, in the long term, enhance professional development of nurse managers, improve the quality of the nursing work environment, and promote patient safety culture in acute care hospital settings. The results of the study will be disseminated broadly using the Lavis, Robertson, Woodside, McLeod, and Abelson (2003) framework for knowledge transfer.

Based on Lavis et al.'s (2003) framework, the following elements are considered in the knowledge transfer plan: key messages, target audience, messenger, knowledge transfer processes, and evaluation plan. The results of this research will be shared at the individual (general public), professional (practitioners/clinicians), and system/policy levels. The study findings will be published in scientific journals in healthcare and management domains within two years of study completion. In addition, presentations will be offered at local, national and international conferences via poster and oral presentations. There will be consultation with stakeholders and nurse leaders regarding the best medium for broad dissemination across organizations such as hospital journal reviews, seminars and leadership meetings. Additionally, an executive summary of the results will be shared with key external organizations including the Canadian Nurses

Foundation, the Registered Nurses Association of Ontario, the Nursing Research Interest Group, and the Nursing Leadership Network of Ontario.

Summary Conclusions

In conclusion, this research investigated Bass and Avolio's (1990) Augmentation Model of Transactional and Transformational leadership and its relation to job satisfaction and nurse-assessed adverse patient outcomes in Ontario acute care hospitals. The intention of this research was to determine whether transactional leadership behaviours augmented by transformational leadership skills could effectively impact nursing work empowerment and subsequently, clinical leadership, and nurse and patient safety outcomes. The findings of this research supported the proposition that nurse managers' use of transformational leadership behaviours create empowering work environments for nurses that foster clinical leadership practices of staff nurses, and in turn, lower frequency of nurse-assessed adverse patient outcomes.

With the release of the IOM report, health care organizations began to strategically develop safety and quality plans to improve patient care in the hospital environment. A need arose for research to understand the underlying factors that influence adverse patient outcomes. This need provides a fundamental motivation for this thesis. In order to ensure patient safety, strong nursing leadership is required to implement effective management practices to consistently foster and support an environment conducive to providing high quality patient care. Specifically, the salient role of transformational leadership is critical in optimizing the nursing work environment and providing the infrastructure to ensure that nurses are empowered to practice to their fullest scope, and thus, deliver high quality care. The findings of this research suggest

that a complex interplay of associations between the relational practices of formal nursing leaders to provide vision, support, staffing resources and leadership, with the health, competencies, abilities, knowledge, skills and motivation of nurses, are integral to the achievement of better patient outcomes.

References

Abdelhafiz, I. M., Mah'd Alloubani, A., Klaledeh, M., Mutari, N., & Almukhtar, M. M. (2015). Impact of leadership styles among head nurses on level of job satisfaction among staff nurses. *European Scientific Journal*, *1*, 203–216.

Aboshaiqah, A. E., Hamdan-Mansour, A. M., Sherrod, D. R., Alkhaibary, A., & Alkhaibary, S. (2014). Nurses' Perception of Managers' Leadership Styles and Its Associated Outcomes. *American Journal of Nursing Research*, *2*(4), 57–62.

AbuAlRub, R. F., & Alghamdi, M. G. (2012). The impact of leadership styles on nurses' satisfaction and intention to stay among Saudi nurses. *Journal of Nursing Management*, *20*(5), 668–678.

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J. A., Busse, R., Clarke, H., … Shamian, J. (2001). Nurses' reports on hospital care in five countries. *Health Affairs*, *20*(3), 43–53.

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*, *288*(16), 1987–1993.

Aiken, L. H., Sloane, D. M., Bruyneel, L., Van den Heede, K., & Sermeus, W. (2013). Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. *International Journal of Nursing Studies*, *50*(2), 143–153.

Alimo-Metcalfe, B., & Alban-Metcalfe, R. J. (2001). The development of a new transformational leadership questionnaire. *Journal of Occupational and Organizational Psychology*, *74*(1), 1–27.

American Nurses Association. (2000). Nurse staffing and patient outcomes in the inpatient hospital setting. American Nurses Association.

American Nurses Association. (2009). Nursing administration: Scope and standards of practice. Silver Spring, MD: Nursesbooks.org.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423.

Antonakis, J., Avolio, B. J., & Sivasubramaniam, N. (2003). Context and leadership: An examination of the nine-factor full-range leadership theory using the Multifactor Leadership Questionnaire. *The Leadership Quarterly*, *14*(3), 261–295.

Arbuckle, J. L. (1996). Full information estimation in the presence of incomplete data. In G.A. Marcoulides & R.E. Schumacker (Eds.), *Advanced Structural Equation Modeling: Issues and Techniques* (pp. 243–277). Mahwak, NJ: Lawerence Erlbaum Associates.

Armstrong, K., Laschinger, H., & Wong, C. (2009). Workplace empowerment and magnet hospital characteristics as predictors of patient safety climate. *Journal of Nursing Care Quality*, *24*(1), 55–62.

Attari, M. (2013). The Impact of Transformational Leadership on Nurse Psychological Empowerment. *International Journal of Hospital Research*, *2*(2), 71–76.

Atwater, L. E., & Yammarino, F. J. (1992). Does self-other agreement on leadership perceptions moderate the validity of leadership and performance predictions? *Personnel Psychology*, *45*(1), 141–164.

Avolio, B. J. (1999). *Full leadership development: Building the vital forces in organizations*. Sage.

Avolio, B. J., & Bass, B. M. (1988). *Transformational leadership, charisma, and beyond*. (J. Hunt, Ed.)*Emerging Leadership Vistas*. Lanham, MD: Lexington Books/DC Heath and Com.

Avolio, B. J., & Bass, B. M. (1994). *Evaluating the impact of the full range of leadership training: Final report to the Kellogg Foundation*. Binghamton, NY: State University of New York at Binghamton, Center for Leadership Studies.

Avolio, B. J., & Bass, B. M. (2004). Multifactor Leadership Questionnaire. *Manual*. Redwood City, CA: Mind Garden.

Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership. *Journal of Occupational and Organizational Psychology*, *72*(4), 441–462.

Avolio, B. J., Gardner, W. L., Walumbwa, F. O., Luthans, F., & May, D. R. (2004). Unlocking the mask: A look at the process by which authentic leaders impact follower attitudes and behaviors. *The Leadership Quarterly*, *15*(6), 801–823.

Avolio, B. J., Zhu, W., Koh, W., & Bhatia, P. (2004). Transformational leadership and organizational commitment: Mediating role of psychological empowerment and moderating role of structural distance. *Journal of Organizational Behavior*, *25*(8), 951–968.

Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science*, *40*(1), 8–34.

Baker, G. R., Norton, P. G., Flintoft, V., Blais, R., Brown, A., Cox, J., … Majumdar, S. R. (2004). The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada. *Canadian Medical Association Journal*, *170*(11), 1678–1686.

Barling, J., Weber, T., & Kelloway, E. K. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of*

Applied Psychology, *81*(6), 827–832.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press; Collier Macmillan.

Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, *18*(3), 19–31.

Bass, B. M. (1997). Does the transactional–transformational leadership paradigm transcend organizational and national boundaries? *American Psychologist*, *52*(2), 130–139.

Bass, B. M. (1998). Transformational leadership: Industry, military, and educational impact. Mahwah, NJ: Erlbaum.

Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work & Organizational Psychology*, *8*(1), 9–32.

Bass, B. M., & Avolio, B. J. (1990). The implications of transactional and transformational leadership for individual, team, and organizational development. *Research in Organizational Change & Development*, *4*, 231–272.

Bass, B. M., & Avolio, B. J. (1994). *Improving organizational effectiveness through transformational leadership*. Thousand Oaks CA Sage.

Bass, B. M., & Avolio, B. J. (1995). Multifactor leadership questionnaire: Manual leader form, rater, and scoring key for MLQ (Form 5x-Short). *Mind Garden, Redwood City, CA*.

Bass, B. M., & Avolio, B. J. (1997). *Full range leadership development: Manual for the Multifactor Leadership Questionnaire*. Mind Garden Palo Alto, CA.

Bass, B. M., & Avolio, B. J. (2000). *MLQ multifactor leadership questionnaire for research: Permission set* (2nd ed). Redwood, CA: Mind Garden.

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership*. Mahwah, New Jersey 07430: Lawrence Erlbaum Associates, Inc.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*(3), 588–606.

Blegen, M. A. (1993). Nurses' job satisfaction: a meta-analysis of related variables. *Nursing Research*, *42*(1), 36–41.

Blegen, M. A., Goode, C., & Reed, L. (1998). Adverse Patient Occurrences as a Measure of Nursing Care Quality. *Journal of Nursing Administration*, *28*(5), 62–69.

Boamah, S. A., Read, E. A., & Laschinger, H. K. (2016). Factors influencing new

graduate nurse burnout development, job satisfaction and patient care quality: a time-lagged study. *Journal of Advanced Nursing*. doi: 10.1111/jan.13215.

Boamah, S., & Laschinger, H. (2014). Engaging new nurses: the role of psychological capital and workplace empowerment. *Journal of Research in Nursing*, *20*(4), 265–277.

Bollen, K. A. (1989). *Structural equations with latent variables*. *Psychometrika* (Vol. 45).

Boonyarit, I., Chomphupart, S., & Arin, N. (2010). Leadership, empowerment, and attitude outcomes. *International Journal of Behavioral Science (IJBS)*, *5*(1), 1–14.

Booth, W. C., Colomb, G. G., & Williams, J. M. (2003). *The Craft of Research, Second Edition (Chicago Guides to Writing, Editing, and Publishing)*. Chicago: University of Chicago Press.

Bormann, L., & Abrahamson, K. (2014). Do staff nurse perceptions of nurse leadership behaviors influence staff nurse job satisfaction? The case of a hospital applying for Magnet® Designation. *Journal of Nursing Administration*, *44*(4), 219–225.

Brewer, C. S., Kovner, C. T., Djukic, M., Fatehi, F., Greene, W., Chacko, T. P., & Yang, Y. (2016). Impact of transformational leadership on nurse work outcomes. *Journal of Advanced Nursing*, *72*(11), 2879–2893.

Burns, J. M. (1978). Leadership. NY. Harper & Row.

Bycio, P., Hackett, R. D., & Allen, J. S. (1995). Further assessments of Bass's (1985) conceptualization of transactional and transformational leadership. *Journal of Applied Psychology*, *80*(4), 468–478.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York, NY: Routledge: Taylor & Francis Group.

Cai, C., & Zhou, Z. (2009). Structural empowerment, job satisfaction, and turnover intention of Chinese clinical nurses. *Nursing & Health Sciences*, *11*(4), 397–403.

Canadian Institute for Health Information. (2016a). *Measuring Patient Harm in Canadian Hospitals*. *With What can be done to improve patient safety?* Ottawa, ON: CIHI.

Canadian Institute for Health Information. (2016b). *Workforce Trends of Regulated Nurses in Canada 2015*. Ottawa, ON: CIHI. Retrieved from https://secure.cihi.ca/estore/productFamily.htm?locale=en&pf=PFC3152

Capuano, T., Bokovoy, J., Hitchings, K., & Houser, J. (2005). Use of a validated model to evaluate the impact of the work environment on outcomes at a magnet hospital.

Health Care Management Review, *30*(3), 229–236.

Carney, M. (2009). Public health nurses perception of clinical leadership in Ireland: narrative descriptions. *Journal of Nursing Management*, *17*(4), 435–445.

Casey, M., McNamara, M., Fealy, G., & Geraghty, R. (2011). Nurses' and midwives' clinical leadership development needs: A mixed methods study. *Journal of Advanced Nursing*, *67*(7), 1502–1513.

Casida, J., & Parker, J. (2011). Staff nurse perceptions of nurse manager leadership styles and outcomes. *Journal of Nursing Management*, *19*(4), 478–486.

Cassidy, V. R., & Koroll, C. J. (1994). Ethical aspects of transformational leadership. *Holistic Nursing Practice*, *9*(1), 41–47.

Chávez, E. C., & Yoder, L. H. (2014). Staff Nurse Clinical Leadership: A Concept Analysis. In *Nursing Forum* (Vol. 50, pp. 90–100). Wiley Online Library.

Cho, Y. I., Johnson, T. P., & VanGeest, J. B. (2013). Enhancing surveys of health care professionals a meta-analysis of techniques to improve response. *Evaluation & the Health Professions*, *36*(3), 382–407.

Cicolini, G., Comparcini, D., & Simonetti, V. (2014). Workplace empowerment and nurses' job satisfaction: A systematic literature review. *Journal of Nursing Management*, *22*(7), 855–871.

Cina-Tschumi, B., Schubert, M., Kressig, R. W., De Geest, S., & Schwendimann, R. (2009). Frequencies of falls in Swiss hospitals: concordance between nurses' estimates and fall incident reports. *International Journal of Nursing Studies*, *46*(2), 164–171.

College of Nurses of Ontario. (2014). Membership statistics highlights 2014.

Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: Integrating theory and practice. *Academy of Management Review*, *13*(3), 471–482.

Cook, M. (2001). Clinical leadership that works. *Nursing Management* (Harrow, London, England: 1994), *7*(10), 24–28.

Cook, M. J. (1999). Improving care requires leadership in nursing. *Nurse Education Today*, *19*(4), 306–312.

Cortese, C. G. (2007). Job satisfaction of Italian nurses: an exploratory study. *Journal of Nursing Management*, *15*(3), 303–312.

Creswell, J. W. (2003). *Research design Qualitative quantitative and mixed methods approaches* (2nd edn). Thousand Oaks, Ca: Sage.

Cummings, G. G., MacGregor, T., Davey, M., Lee, H., Wong, C. A., Lo, E., … Stafford, E. (2010). Leadership styles and outcome patterns for the nursing workforce and work environment: a systematic review. *International Journal of Nursing Studies*, *47*(3), 363–385.

Cummings, G., Lee, H., MacGregor, T., Davey, M., Wong, C., Paul, L., & Stafford, E. (2008). Factors contributing to nursing leadership: a systematic review. *Journal of Health Services Research & Policy*, *13*(4), 240–248.

Daly, J., Jackson, D., Mannix, J., Davidson, P. M., & Hutchinson, M. (2014). The importance of clinical leadership in the hospital setting. *Journal of Healthcare Leadership*, *6*, 75–83.

Damayanthi, H., Wichaikhum, O., & Chontawan, R. (2014). Predicting factors of job satisfaction among nurses in Sri Lanka. *International Journal of Pharmacy & Bioscience*, *1*(1), 1–7.

David, G., Gunnarsson, C. L., Waters, H. C., Horblyuk, R., & Kaplan, H. S. (2013). Economic measurement of medical errors using a hospital claims database. *Value in Health*, *16*(2), 305–310.

Davies, A., Wong, C. A., & Laschinger, H. (2011). Nurses' participation in personal knowledge transfer: the role of leader–member exchange (LMX) and structural empowerment. *Journal of Nursing Management*, *19*(5), 632–643.

DeCicco, J., Laschinger, H. K., & Kerr, M. (2006). Perceptions of empowerment and respect: effect on nurses' organizational commitment in nursing homes. *Journal of Gerontological Nursing*, *32*(5), 49–56.

DeGroot, T., Kiker, D. S., & Cross, T. C. (2000). A meta- analysis to review organizational outcomes related to charismatic leadership. *Canadian Journal of Administrative Sciences*, *17*(4), 356–372.

Den Hartog, D. N., House, R. J., Hanges, P. J., Ruiz-Quintanilla, S. A., & Dorfman, P. W. (1999). Culture specific and cross-culturally generalizable implicit leadership theories: Are attributes of charismatic/transformational leadership universally endorsed? *The Leadership Quarterly*, *10*(2), 219–256.

Deutskens, E., De Ruyter, K., Wetzels, M., & Oosterveld, P. (2004). Response rate and response quality of Internet-based surveys: An experimental study. *Marketing Letters*, *15*(1), 21–36.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: the tailored design method*. John Wiley & Sons.

Donahue, M. O., Piazza, I. M., Griffin, M. Q., Dykes, P. C., & Fitzpatrick, J. J. (2008). The relationship between nurses' perceptions of empowerment and patient satisfaction. *Applied Nursing Research*, *21*(1), 2–7.

Doran, D., McCutcheon, A. S., Evans, M. G., MacMillan, K., McGillis Hall, L., Pringle, D., … Valente, A. (2004). *Impact of the manager's span of control on leadership and performance*. Ottawa, Ontario.

Duffield, C. M., Roche, M. A., Blay, N., & Stasa, H. (2010). Nursing unit managers, staff retention and the work environment. *Journal of Clinical Nursing*, *20*(1- 2), 23–33.

Duffy, M. (2002). Methodological issues In web-based research. *Journal of Nursing Scholarship*, *34*(1), 83–88.

Eisenbach, R., Watson, K., & Pillai, R. (1999). Transformational leadership in the context of organizational change. *Journal of Organizational Change Management*, *12*(2), 80–89.

Ennis, G., Happell, B., & Reid-Searl, K. (2015). Enabling professional development in mental health nursing: the role of clinical leadership. *Journal of Psychiatric and Mental Health Nursing*, *22*(8), 616–622.

Etchells, E., Mittmann, N., Koo, M., Baker, M., Krahn, M., & Shojania, K. (2012). *The economics of patient safety in acute care*. *Canadian Patient Safety Institute*. Ottawa, Ontario. Retrieved from http://www.patientsafetyinstitute.ca/English/research/commissionedResearch/EconomicsofPatientSafety/Documents/EconomicsReport.pdf

Fealy, G. M., McNamara, M. S., Casey, M., Geraghty, R., Butler, M., Halligan, P., … Johnson, M. (2011). Barriers to clinical leadership development: findings from a national survey. *Journal of Clinical Nursing*, *20*(13- 14), 2023–2032.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurements error. *Journal of Marketing Research*, *18*, 39–50.

Forster, A. J., Dervin, G., Martin Jr., C., & Papp, S. (2012). Improving patient safety through the systematic evaluation of patient outcomes. *Canadian Journal of Surgery*, *55*(6), 418–425.

Gabel, S. (2013). Transformational leadership and healthcare. *Medical Science Educator*, *23*(1), 55–60.

Gerbing, D. W., & Anderson, J. C. (1992). Monte Carlo evaluations of goodness-of-fit indices for structural equation models. *Sociological Methods & Research*, *21*(2), 132–160.

Gerstner, C. R., & Day, D. V. (1997). Meta-Analytic review of leader–member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, *82*(6), 827–844.

Giovannetti, P., Estabrooks, C. A., & Hesketh, K. L. (2002). *Alberta Nurse Survey Final*

Report. *(Report No*. *02-01-TR)*. Edmonton, AB: University of Alberta, Faculty of Nursing.

Granello, D. H., & Wheaton, J. E. (2004). Online data collection: Strategies for research. *Journal of Counseling & Development*, *82*(4), 387–393.

Greco, P., Laschinger, H. K. S., & Wong, C. (2006). Leader empowering behaviours, staff nurse empowerment and work engagement/burnout. *Nursing Leadership*, *19*(4), 41–56.

Gullo, S. R., & Gerstle, D. S. (2004). Transformational leadership and hospital restructuring: A descriptive study. *Policy, Politics, & Nursing Practice*, *5*(4), 259–266.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, *16*(2), 250–279.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. Englewood Cliffs: Prentice Hall.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2012). *An assessment of the use of partial least squares structural equation modeling in marketing research*. *Journal of the Academy of Marketing Science*. New Jersey: Prentice Hall, Inc.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate Data Analysis (7th ed.)*. *Englewood Cliffs: Prentice Hall*.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*(2), 139–152.

Haneuse, S., & Bartell, S. (2011). Designs for the combination of group-and individual-level data. *Epidemiology (Cambridge, Mass)*, *22*(3), 382–389.

Hayati, D., Charkhabi, M., & Naami, A. (2014). The relationship between transformational leadership and work engagement in governmental hospitals nurses: a survey study. *SpringerPlus*, *3*(25), 1–7.

Hayes, A. (2013). *Introduction to mediation, moderation, and conditional process analysis*. *Guilford Press*. New York, NY.

Hayes, B., Bonner, A. N. N., & Pryor, J. (2010). Factors contributing to nurse job satisfaction in the acute hospital setting: a review of recent literature. *Journal of Nursing Management*, *18*(7), 804–814.

Higgins, E. A. (2015). *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*. ProQuest published doctoral dissertation, Western

University, London, Ontario.

Houser, J. (2003). A Model for Evaluating the Context of Nursing Care Delivery. *Journal of Nursing Administration*, *33*(1), 39–47.

Hoyle, R. H. (2012). *Handbook of structural equation modeling*. Guilford Press.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55.

Hughes, R., & Blegen, M. (2008). Medication Administration Safety. *Source Patient Safety and Quality: An Evidence-Based Handbook for Nurses*, 397–457.

Hui, C. (1994). *Effects of leader empowering behaviors and followers personal control, voice, and self-efficacy on in-role performance: An extension and empirical test of Conger and Kanungo's empowerment process model.* Unpublished doctoral dissertation, Indiana University, Indianapolis, Indiana.

Hutchinson, M., & Jackson, D. (2013). Transformational leadership in nursing: Towards a more critical interpretation. *Nursing Inquiry*, *20*(1), 11–22.

IBM Corp. (2010). *SPSS Statistics 19 Core System User's Guide*. Chicago, IL: SPSS Inc.

Institute of Medicine. (2004). *Nursing: Inseparably linked to patient safety*. *In Keeping Patients Safe: Transforming the Work Environment of Nurses*. (Ann Page, Ed.)*National Academy of Sciences*. Retrieved from Retrieved from http://www.nap.edu/openbook.php?isbn=0309090679.

Institute of Medicine. (2010). *The future of nursing: Leading change, advancing health*. *Nursing Education Perspectives* (Vol. 31). National League for Nursing, Inc. Retrieved from http://www.iom.edu/Reports/2010/The-Future-of-Nursing-Leading-Change-Advancing-Health.aspx

Jöreskog, K. G. (1971). Statistical analysis of sets of congeneric tests. *Psychometrika*, *36*(2), 109–133.

Jöreskog, K. G. (1993). Testing structural equation models. InK. A. Bollen & JS Long (Eds.), Testing structural equation models (pp. 294-316). *Newbury Park, CA: Sage*. *Jreskog, KG (2007)*. *Factor Analysis and Its Extensions*. *InR*. *Cudeck & RC MacCallum (Eds.), Factor Analysis at*, *100*, 47–77.

Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: a meta-analytic test of their relative validity. *Journal of Applied Psychology*, *89*(5), 755–768.

Kanter, R. M. (1977). Men and Women of the Corporation. In *Contemporary Sociology* (Vol. 7, pp. 381–395).

Kanter, R. M. (1979). Power Failure in Management Circuits. *Harvard Business Review*, *57*(4), 65–75.

Kanter, R. M. (1993). *Men and Women of the Corporation* (2nd edn). New York: Basic Books.

Keller, S. P., & Kelvin, E. A. (2013). *Munro's statistical methods for health care research* (6th edn). Wolters Kulwer Health, Lippincott Williams & Wilkins.

Kenny, D. A. (2012). Measuring model fit. Retrieved from http://davidakenny.net/cm/fit.htm

Klein, A., & Moosbrugger, H. (2000). Maximum likelihood estimation of latent interaction effects with the LMS method. *Psychometrika*, *65*(4), 457–474.

Kleinman, C. S. (2004). Leadership and retention: Research needed. *Journal of Nursing Administration*, *34*(3), 111–113.

Kline, R. B. (2011). *Principles and practice of structural equation modeling*. New York, NY 10012: The Guilford Press.

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (1999). *To Err Is Human*. *National Academy Press* (Vol. 126). Washington, D.C.

Kouzes, J. M., & Posner, B. Z. (1995). *The leadership challenge: How to keep getting extraordinary things done in organizations*. *San Francisco JosseyBass* (Vol. 2nd). San Francisco, CA: Jossey-Bass.

Kramer, M., & Schmalenberg, C. (2004). Development and evaluation of essentials of magnetism tool. *Journal of Nursing Administration*, *34*(7–8), 365–378.

Landrigan, C. P., Parry, G. J., Bones, C. B., Hackbarth, A. D., Goldmann, D. A., & Sharek, P. J. (2010). Temporal trends in rates of patient harm resulting from medical care. *The New England Journal of Medicine*, *363*(22), 2124–2134.

Laschinger, H. K., Leiter, M., Day, A., & Gilin, D. (2009). Workplace empowerment, incivility, and burnout: Impact on staff nurse recruitment and retention outcomes. *Journal of Nursing Management*, *17*(3), 302–311.

Laschinger, H. K. S. (1996). A theoretical approach to studying work empowerment in nursing: a review of studies testing Kanter's theory of structural power in organizations. *Nursing Administration Quarterly*, *20*(2), 25–41.

Laschinger, H. K. S. (2012). Job and career satisfaction and turnover intentions of newly graduated nurses. *Journal of Nursing Management*, *20*(4), 472–484.

Laschinger, H. K. S. (2014). Impact of workplace mistreatment on patient safety risk and nurse-assessed patient outcomes. *Journal of Nursing Administration*, *44*(5), 284–

290.

Laschinger, H. K. S., Finegan, J. E., Shamian, J., & Wilk, P. (2004). A longitudinal analysis of the impact of workplace empowerment on work satisfaction. *Journal of Organizational Behavior*, *25*(4), 527–545.

Laschinger, H. K. S., Finegan, J., & Shamian, J. (2001c). Promoting nurses' health: effect of empowerment on job strain and work satisfaction. *Nursing Economic$*, *19*(2), 42–52.

Laschinger, H. K. S., Finegan, J., & Shamian, J. (2001a). The impact of workplace empowerment, organizational trust on staff nurses' work satisfaction and organizational commitment. *Health Care Management Review*, *26*(3), 7–23.

Laschinger, H. K. S., Finegan, J., Shamian, J., & Wilk, P. (2001d). Impact of structural and psychological empowerment on job strain in nursing work settings: expanding Kanter's model. *Journal of Nursing Administration*, *31*(5), 260–272.

Laschinger, H. K. S., Finegan, J., & Wilk, P. (2009). Context matters: The impact of unit leadership and empowerment on nurses' organizational commitment. *Journal of Nursing Administration*, *39*(5), 228–235.

Laschinger, H. K. S., Finegan, J., & Wilk, P. (2011). Situational and dispositional influences on nurses' workplace well-being: the role of empowering unit leadership. *Nursing Research*, *60*(2), 124–131.

Laschinger, H. K. S., & Havens, D. (1996). Staff nurse work empowerment and perceived control over nursing practice: Conditions for work effectiveness. *Journal of Nursing Administration*, *26*(9), 27–35.

Laschinger, H. K. S., & Leiter, M. P. (2006). The impact of nursing work environments on patient safety outcomes: the mediating role of burnout/engagement. *Journal of Nursing Administration*, *36*(5), 259–267.

Laschinger, H. K. S., Sabiston, J. A., & Kutszcher, L. (1997). Empowerment and staff nurse decision involvement in nursing work environments: testing Kanter's theory of structural power in organizations. *Research in Nursing & Health*, *20*(4), 341–352.

Laschinger, H. K. S., Shamian, J., & Thomson, D. (2001b). Impact of magnet hospital characteristics on nurses perceptions of trust, burnout, quality of care, and work satisfaction. *Nursing Economic$*, *19*(5), 209–219.

Laschinger, H. K. S., Wong, Carol, A., Cummings, G. G., & Grau, A. L. (2013b). Resonant leadership and workplace empowerment : The value of positive organizational cultures in reducing workplace incivility. *Nursing Economic$*, *32*(1), 5–15.

Laschinger, H. K. S., Wong, C. A., & Grau, A. L. (2013a). Authentic leadership,

empowerment and burnout: A comparison in new graduates and experienced nurses. *Journal of Nursing Management*, *21*(3), 541–552.

Laschinger, H. K. S., Wong, C., McMahon, L., & Kaufmann, C. (1999). Leader behavior impact on staff nurse empowerment, job tension, and work effectiveness. *Journal of Nursing Administration*, *29*(5), 28–39.

Laschinger, H. K., Wong, C. A., Grau, A. L., Read, E. A., & Pineau Stam, L. M. (2011). The influence of leadership practices and empowerment on Canadian nurse manager outcomes. *Journal of Nursing Management*, *20*(7), 877–888.

Lautizi, M., Laschinger, H. K. S., & Ravazzolo, S. (2009). Workplace empowerment, job satisfaction and job stress among Italian mental health nurses: an exploratory study. *Journal of Nursing Management*, *17*(4), 446–452.

Lavis, J. N., Robertson, D., Woodside, J. M., McLeod, C. B., & Abelson, J. (2003). How can research organizations more effectively transfer research knowledge to decision makers? *Milbank Quarterly*, *81*(2), 221–248.

Lazar, J., & Preece, J. (1999). Designing and implementing Web-based surveys. *Journal of Computer Information Systems*, *39*(4), 63–67.

Lett, M. (2002). The concept of clinical leadership. *Contemporary Nurse: A Journal for the Australian Nursing Profession*, *12*(1), 16–21.

Liden, R. C., & Maslyn, J. M. (1998). Multidimensionality of leader-member exchange: An empirical assessment through scale development. *Journal of Management*, *24*(1), 43–72.

Lin, P. Y., MacLennan, S., Hunt, N., & Cox, T. (2015). The influences of nursing transformational leadership style on the quality of nurses' working lives in Taiwan: a cross-sectional quantitative study. *BMC Nursing*, *14*(33), 1–9.

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198–1202.

Little, R. J. A., & Rubin, D. B. (2002). *Statistical Analysis with Missing Data* (2nd ed.). John Wiley & Sons, Inc., Hoboken, New Jersey.

Lönnqvist, A., & Hannula, M. (2000). *Validating performance measures with the nomological network*. Retrieved from Paper presented at the 2nd Conference on New Directions in Management Accounting: Innovations and Research, European Institute for Advanced Studies in Management.

Lowe, K. B., Kroeck, K. G., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the mlq literature. *The Leadership Quarterly*, *7*(3), 385–425.

Lu, H., Barriball, K. L., Zhang, X., & While, A. E. (2012). Job satisfaction among hospital nurses revisited: a systematic review. *International Journal of Nursing Studies*, *49*(8), 1017–38.

Lu, H., While, A. E., & Barriball, K. L. (2007). Job satisfaction and its related factors: a questionnaire survey of hospital nurses in Mainland China. *International Journal of Nursing Studies*, *44*(4), 574–588.

Lucas, V., Laschinger, H. K., & Wong, C. A. (2008). The impact of emotional intelligent leadership on staff nurse empowerment: the moderating effect of span of control. *Journal of Nursing Management*, *16*(8), 964–973.

Lucero, R. J., Lake, E. T., & Aiken, L. H. (2010). Nursing care quality and adverse events in US hospitals. *Journal of Clinical Nursing*, *19*(15–16), 2185–2195.

Maas, M. L., Johnson, M., & Moorhead, S. (1996). Classifying nursing-sensitive patient outcomes. *Journal of Nursing Scholarship*, *28*(4), 295–301.

Mackinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, *39*(1), 99–128.

Mannix, J., Wilkes, L., & Daly, J. (2013). Attributes of clinical leadership in contemporary nursing: an integrative review. *Contemporary Nurse*, *45*(1), 10–21.

Manojlovich, M. (2005). Linking the practice environment to nurses' job satisfaction through nurse-physician communication. *Journal of Nursing Scholarship*, *37*(4), 367–373.

Manojlovich, M., & Laschinger, H. K. S. (2002). The relationship of empowerment and selected personality characteristics to nursing job satisfaction. *Journal of Nursing Administration*, *32*(11), 586–595.

Maslow, A. (1954). *Motivation and personality*. *Journal of Consulting Psychology* (Vol. 19). New York: Harper & Row.

Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, *12*, 23–44.

McCutcheon, A. S., Doran, D., Evans, M., Hall, L. M., & Pringle, D. (2009). *Effects of leadership and span of control on nurses' job satisfaction and patient satisfaction. Nursing leadership* (Vol. 22).

McGuire, E., & Kennerly, S. M. (2006). Nurse managers as transformational and transactional leaders. *Nursing Economics*, *24*(4), 179–185.

McHugh, M. D., & Stimpfel, A. W. (2012). Nurse reported quality of care: A measure of hospital quality. *Research in Nursing and Health*, *35*(6), 566–575.

McNeese-Smith, D. (1995). Job satisfaction, productivity, and organizational commitment. The result of leadership. *Journal of Nursing Administration*, *25*(9), 17–26.

McNeese-Smith, D. K. (1999). The relationship between managerial motivation , leadership , nurse outcomes and patient satisfaction. *Journal of Organizational Behaviour*, *20*, 243–259.

Menon, S. (2001). Employee empowerment: An integrative psychological approach. *Applied Psychology*, *50*(1), 153–180.

Mohammad, S. I. S., AL-Zeaud, H. A., & Batayneh, A. M. E. (2011). The relationship between transformational leadership and employees' satisfaction at Jordanian private hospitals. *Business and Economic Horizons*, *5*(2), 35–46.

Morrison, R. S., Jones, L., & Fuller, B. (1997). The relation between leadership style and empowerment on job satisfaction of nurses. *Journal of Nursing Administration*, *27*(5), 27–34.

Murphy, L. (2005). Transformational leadership: A cascading chain reaction. *Journal of Nursing Management*, *13*(2), 128–136.

Muthén, L., & Muthén, B. (2012). *Mplus user's guide (6th ed.)*. *Los Angeles*.

Negussie, N., & Demissie, A. (2013). Relationship between leadership styles of nurese managers and nurses' job satisfaction in Jimma university specialized hospital. *Ethiopian Journal of Health Sciences*, *23*(1), 49–58.

Neter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. (1996). *Applied linear statistical models* (Vol. 4). Chicago: Irwin.

Nunnally, J. (1978). *Psychometric methods*. New York, NY: McGraw-Hill.

Özaralli, N. (2003). Effects of transformational leadership on empowerment and team effectiveness. *Leadership & Organization Development Journal*, *24*(6), 335–344.

Page, A. (2004). *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, D.C.: The National Academic Press.

Parry, K., Avolio, B. J., & Bass, B. M. (2003). *Leadership Development Plan*. *Upublished manuscript*.

Patrick, A., Laschinger, H. K. S., Wong, C., & Finegan, J. (2011). Developing and testing a new measure of staff nurse clinical leadership: The clinical leadership survey. *Journal of Nursing Management*, *19*(4), 449–460.

Pedhazur, E. J., & Pedhazur Schmelkin, L. (1991). *Measurement, design, and analysis: An integrated approach*. Lawrence Erlbaum Associates, Hillsdale, New Jersey.

Pettorini-D'Amico, S. A. (2014). Clinical leadership skills acquisition in nurse residents. In *Paper presented at the sigma theta tau international leadership connection 2014*. Indianapolis, Indiana, USA. Retrieved from Retrieved from https://stti.confex.com/stti/leadfm14/webprogram/Paper67600.html

Pielstick, C. D. (2000). Formal vs. informal leading: A comparative analysis. *Journal of Leadership and Organizational Studies*, *7*(3), 99–114.

Pineau Stam, L., Laschinger, H., Regan, S., & Wong, C. (2015). The influence of personal and workplace resources on new graduate nurses' job satisfaction. *Journal of Nursing Management*, *23*(2), 190–199.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*(1), 539–569.

Polit, D. F., & Beck, C. T. (2012). *Nursing Research: Generating and Assessing Evidence for Nursing Practice* (9th ed.). Philadelphia: Lippincott William & Wilkins.

Porter-O'Grady, T. (2011). Leadership at all levels. *Nursing Management*, *42*(5), 32–37.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891.

Pronovost, P. J., Cleeman, J. I., Wright, D., & Srinivasan, A. (2016). Fifteen years after To Err is Human: a success story to learn from. *BMJ Quality & Safety*, *25*(6), 396–399.

Purdy, N., Spence Laschinger, H. K., Finegan, J., Kerr, M., & Olivera, F. (2010). Effects of work environments on nurse and patient outcomes. *Journal of Nursing Management*, *18*(8), 901–913.

Rath, T., & Conchie, B. (2008). *Strength Based Leadership: Great Leaders, Teams and why People Follow*. New York, NY: Gallup Press.

Raup, G. H. (2008). The impact of ED nurse manager leadership style on staff nurse turnover and patient satisfaction in academic health center hospitals. *Journal of Emergency Nursing*, *34*(5), 403–409.

Registered Nurses' Association of Ontario. (2013). *Developing and Sustaining Nursing Leadership (2nd ed.)*. Toronto, ON.

Roche, J., Morsi, D., & Chandler, G. E. (2009). Testing a work empowerment-work relationship model to explain expertise in experienced acute care nurses. *Journal of Nursing Administration*, *39*(3), 115–122.

Rubin, D. B. (1976). Inference and Missing Data. *Biometrika*, *63*(3), 581–592.

Sabiston, J. A., & Laschinger, H. K. S. (1995). Staff nurse work empowerment and perceived autonomy: testing Kanter's theory of structural power in organizations. *Journal of Nursing Administration*, *58*(9), 42–50.

Salanova, M., Lorente, L., Chambel, M. J., & Martínez, I. M. (2011). Linking transformational leadership to nurses' extra-role performance: The mediating role of self-efficacy and work engagement. *Journal of Advanced Nursing*, *67*(10), 2256–2266.

Sarmiento, T. P., Laschinger, H. K. S., & Iwasiw, C. (2004). Nurse educators' workplace empowerment, burnout, and job satisfaction: testing Kanter's theory. *Journal of Advanced Nursing*, *46*(2), 134–143.

Schumacker, R. E., & Lomax, R. G. (2004). *A Beginner's Guide to Structural Equation Modeling*. *Lawrence Erlbaum Associates, Inc.,Publishers*.

Shields, M. A., & Ward, M. (2001). Improving nurse retention in the National Health Service in England: The impact of job satisfaction on intentions to quit. *Journal of Health Economics*, *20*(5), 677–701.

Shirey, M. R. (2006). Authentic leaders creating healthy work environments for nursing practice. *American Journal of Critical Care*, *15*(800), 256–268.

Smith, D. S., & Dabbs, M. T. (2007). Clinical nurse leader: evolution of a revolution. Transforming the care delivery model in preparation for the clinical nurse leader. *Journal of Nursing Administration*, *37*(4), 157–160.

Smith, L. M., Andrusyszyn, M. A., & Spence Laschinger, H. K. (2010). Effects of workplace incivility and empowerment on newly-graduated nurses' organizational commitment. *Journal of Nursing Management*, *18*(8), 1004–1015.

Sochalski, J. (2001). Quality of Care, Nurse Staffing, and Patient Outcomes. *Policy, Politics, & Nursing Practice*, *2*(1), 9–18.

Sochalski, J. (2004). Is more better?: the relationship between nurse staffing and the quality of nursing care in hospitals. *Medical Care*, *42*(2 Suppl), II67-II73.

Soop, M., Fryksmark, U., Köster, M., & Haglund, B. (2009). The incidence of adverse events in Swedish hospitals: a retrospective medical record review study. *International Journal for Quality in Health Care : Journal of the International Society for Quality in Health Care / ISQua*, *21*(4), 285–91.

Spector, P. E. (1997). *Job satisfaction: Application, assessment, cause, and consequences*. *Sage Publications* (Vol. 35).

Spector, P. E. (2006). Method Variance in Organizational Research: Truth or Urban

Legend? *Organizational Research Methods*, *9*(2), 221–232.

Spence Laschinger, H. K. (2008). Effect of empowerment on professional practice environments, work satisfaction, and patient care quality: further testing the Nursing Worklife Model. *Journal of Nursing Care Quality*, *23*(4), 322–330.

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal*, *38*(5), 1442–1465.

Spreitzer, G. M., Perttula, K. H., & Xin, K. (2005). Traditionality matters: An examination of the effectiveness of transformational leadership in the United States and Taiwan. *Journal of Organizational Behavior*, *26*(3), 205–227.

Squires, M., Tourangeau, A., Spence Laschinger, H. K., & Doran, D. (2010). The link between leadership and safety outcomes in hospitals. *Journal of Nursing Management*, *18*(8), 914–925.

Stamps, P. L. (1997). *Nursing and Work Satisfaction: An Index for Measurement* (2nd edn.). Chicago, IL: Health Administration Press.

Stanley, D. (2006). In command of care: clinical nurse leadership explored. *Journal of Research in Nursing*, *11*(1), 20–39.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics (4th ed.). Needham Heights, MA* (Vol. 28). Allyn & Bacon.

Taunton, R. L., Boyle, D. K., Woods, C. Q., Hansen, H. E., & Bott, M. J. (1997). Manager leadership and retention of hospital staff nurses. *Western Journal of Nursing Research*, *19*(2), 205–226.

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *Academy of Management Review*, *15*(4), 666–681.

Tourangeau, A., Cranley, L., Spence Laschinger, H. K., & Pachis, J. (2010). Relationships among leadership practices, work environments, staff communication and outcomes in long-term care. *Journal of Nursing Management*, *18*(8), 1060–1072.

Tourangeau, A. E., Giovannetti, P., Tu, J. V, & Wood, M. (2002). Nursing-related determinants of 30-day mortality for hospitalized patients. *Canadian Journal of Nursing Research*, *33*(4), 71–88.

Tourangeau, A. E., & McGilton, K. (2004). Measuring leadership practices of nurses using the Leadership Practices Inventory. *Nursing Research*, *53*(3), 182–189.

Trott, M. C., & Windsor, K. (1999). Leadership effectiveness: how do you measure up? *Nursing Economic$*, *17*(3), 127–130.

Ulrich, B., Krozek, C., Early, S., Ashlock, C. H., Africa, L. M., & Carman, M. L. (2010). Improving retention, confidence, and competence of new graduate nurses: Results from a 10-year longitudinal study. *Nursing Economic$*, *28*(6), 363–375.

Upenieks, V. V. (2003). What constitutes effective leadership? Perceptions of magnet and nonmagnet nurse leaders. *Journal of Nursing Administration*, *32*(9), 456–467.

Varkey, P., & Antonio, K. (2010). Change management for effective quality improvement: a primer. *American Journal of Medical Quality*, *25*(4), 268–273.

Vincent, C., Aylin, P., Franklin, B. D., Holmes, A., Iskander, S., Jacklin, A., & Moorthy, K. (2008). Is health care getting safer? *BMJ (Clinical Research Ed.)*, *337*, a2426–a2436.

Vogus, T. J., & Sutcliffe, K. M. (2007). The impact of safety organizing, trusted leadership, and care pathways on reported medication errors in hospital nursing units. *Medical Care*, *45*(10), 997–1002.

Wachter, R. M. (2004). The end of the beginning: patient safety five years after "to err is human". *Health Affairs (Project Hope)*, *Suppl Web*(November), 534–545.

Walumbwa, F. O., Lawler, J. J., & Avolio, B. J. (2007). Leadership, individual differences, and workrelated attitudes: A cross-culture investigation. *Applied Psychology*, *56*(2), 212–230.

Walumbwa, F. O., Orwa, B., Wang, P., & Lawler, J. J. (2005). Transformational Leadership, Organizational Commitment, and Job Satisfaction: A comparative Study of Kenyan and U.S. Financial Firms. *Human Resource Development Quarterly*, *16*(2), 235–256.

Wong, C. A. (2015). Connecting nursing leadership and patient outcomes: state of the science. *Journal of Nursing Management*, *23*(3), 275–278.

Wong, C. A., Cummings, G. G., & Ducharme, L. (2013). The relationship between nursing leadership and patient outcomes: A systematic review update. *Journal of Nursing Management*, *21*(5), 709–724.

Wong, C. A., & Giallonardo, L. M. (2013). Authentic leadership and nurse-assessed adverse patient outcomes. *Journal of Nursing Management*, *21*, 740–752.

Wong, C. A., & Laschinger, H. K. S. (2012). Authentic leadership, performance, and job satisfaction: the mediating role of empowerment. *Journal of Advanced Nursing*, *69*(4), 947–959.

World Health Organization. (2006). *World health report 2006: Working together for health*. *WHO*. Geneva.

Yammarino, F. J., Spangler, W. D., & Bass, B. M. (1993). Transformational leadership

and performance: A longitudinal investigation. *Leadership Quarterly*, *4*(1), 81–102.

Young-Ritchie, C., Laschinger, H. K., & Wong, C. (2009). The effects of emotionally intelligent leadership behaviour on emergency staff nurses' workplace empowerment and organizational commitment. *Nursing Leadership (Toronto, Ont.)*, *22*, 70–85.

Yukl, G. A. (2010). *Leadership in organizations* (7th ed.). Englewood Cliffs, NJ: Pearson Prentice Hall.

Zhang, Z. (2008). *In the eyes of the follower: Cognitive and affective antecedents of transformational leadership perception and individual outcomes*. ProQuest Dissertation Abstracts International, Section A. Humanities and Social Sciences, 69(6-A), 3318039.

Zhu, W., Avolio, B. J., & Walumbwa, F. O. (2009). *Moderating Role of Follower Characteristics With Transformational Leadership and Follower Work Engagement*. *Group & Organization Management* (Vol. 34).

Zwingman-Bagley, C. (1999). Transformational management style positively affects financial outcomes. *Nursing Administration Quarterly*, *23*(4), 29–34.

APPENDICES

Appendix A

Research Ethics Approval

Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Heather Laschinger
Department & Institution: Health Sciences\Nursing,Western University

Review Type: Delegated
HSREB File Number: 107356
Study Title: The Influence of Transformational Leadership on Nurse-Reported and Patient Safety Outcomes

HSREB Initial Approval Date: December 23, 2015
HSREB Expiry Date: December 23, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Other	Reminder letter (Received 22Dec15)	
Letter of Information & Consent	LOI - Revised (clean)	2015/12/22
Western University Protocol	Received 02Dec15	
Instruments	Survey (Received 27Oct15)	

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Ethics Officer, on behalf of Dr. Joseph Gilbert, HSREB Chair

Ethics Officer to Contact for Further Information: Erika Basile ___ Nicole Kaniki ___ Grace Kelly ___ Mina Mekhail ✓ Vikki Tran ___

This is an official document. Please retain the original in your files

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6G 1G9 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/ethics

Western
Arthur Labatt Family
School of Nursing

Appendix B

Letter of Information and Invitation to Participate

The Influence of Transformational Leadership on Nurse-Reported Patient Safety Outcomes

Date:

Dear Nursing Colleague,

I am a doctoral student at the Arthur Labatt Family School of Nursing at the University of Western Ontario under the supervision of Dr. Heather Laschinger. I would like to invite you to participate in my doctoral research project, which focuses on how your manager's leadership behaviours impact the work environment and subsequently, your job satisfaction and patient safety outcomes on your unit. The College of Nurses of Ontario has provided your name as an eligible candidate to participate in this study. If you are a registered nurse (RN) working in acute care setting, please consider participating in this important study by completing the enclosed survey, as your contribution is highly valued.

The purpose of this study is to gain more understanding about the influence of nurse managers' leadership behaviours on the nursing work environment, staff nurses' leadership practices at the bedside, overall job satisfaction and frequency of adverse patient outcomes/complications (i.e., falls, medication errors). RNs employed in direct care positions in Ontario hospitals are invited to participate in this study. The sample will consist of approximately 1,000 nurses.

To participate in the study, I invite you to complete the enclosed questionnaire, which should take approximately 15-20 minutes to complete. There are 2 ways that you can complete the survey if you agree to participate. Select the **one** method that is most convenient:

Option 1: PAPER SURVEY – Please complete the enclosed survey booklet. Place the survey in the self-addressed stamped envelope provided and place it in the mail.

Option 2: ONLINE SURVEY – The survey can be accessed at the web address below or by scanning the 'QR code' and entering your unique PIN code which can be found in-front of the survey booklet. The survey needs to be completed at one time.

Participation in this study is entirely voluntary. By completing this survey you are consenting to participate in the study. You may refuse to participate, answer any questions, or withdraw from the study at any time with no effect on your current/ future employment or education by not mailing or closing the website prior to submitting your survey. After this time, your survey cannot be returned or deleted, as there are no

identifiers linking you to a specific survey. If you do not wish to participate in the survey, we encourage you to return the blank survey to avoid receiving a reminder follow-up survey.

Please note that all information you provide will be kept strictly confidential and anonymous and no personal identifiers will be used. All information will be securely stored in computer files and a locked cabinet at the University for up to five years and destroyed afterwards, and only the investigators can access the data. For confidentiality purposes, if the results of the study were published, data would be grouped and reported as such, and your name will not be used. There are no known or anticipated risks or discomforts associated with participating in this study. Knowledge gained from this study will benefit the nursing profession and may be useful for nurse managers, leaders and healthcare organizations to provide healthy work environment for nurses and improve patient outcomes.

While you are under no obligation to participate, we encourage you to do so, and in the spirit of good faith your name will be entered into a draw to win a $100 gift certificate as a token of appreciation for completing the questionnaire (2 prizes awarded in total). At the end of the survey, you will be asked if you agree to enter into the draw, and if so, will be asked for your personal email address. The research team will randomly choose the winner from the list of participants and you will be notified by email if you were selected for the prize. Your name and address will be required at this time in order to mail the prize and after the prizes have been distributed your personal information will be destroyed.

If you require any further information regarding this research project or your participation in the study you may contact me at: XXX or my thesis supervisor, Dr. Heather Laschinger at XXX. Representatives of Western University's Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics at XXX email: XXX.

Online survey link: https://uwo.eu.qualtrics.com/LeadershipSurvery

Thank you for your time.

Sincerely,

Sheila Boamah, RN, PhD(c) Heather Laschinger, RN, PhD

This letter is yours to keep for future reference.

Appendix C

Reminder Letter

Western
Arthur Labatt Family
School of Nursing

The Influence of Transformational Leadership on Nurse-Reported Patient Safety Outcomes
Letter of Information for Nurses and Invitation to Participate

Date:

Dear Nursing Colleague:

Approximately four weeks ago a survey was mailed to you seeking your perspective on your unit Manager/ Supervisor's leadership style, work environment, your clinical leadership practices, overall job satisfaction and patient care outcomes.

This letter serves as a reminder for you to provide your perspective on these important issues. If you have already completed and returned the survey, please accept our sincerest gratitude. If you have not yet completed the survey, please consider doing so today. As a Registered Nurse, your perspective is highly valued to help gain a greater understanding of the type of leadership styles required to produce desired patient outcomes and how leaders can create healthy and safe work environments for nurses.

Please note that the survey was sent to a small but representative sample of nurses in Ontario working in acute care hospitals so it is important that we receive your input so that the results can accurately reflect the perspectives of all Ontario nurses.

If you have misplaced your survey or did not receive a copy, please do not hesitate to contact me at: XXX or my thesis Supervisor Dr. Heather Laschinger via email at: XXX and we will ensure that you receive additional copy.

Online survey link: **https://uwo.eu.qualtrics.com/LeadershipSurvery**

Thank you for your time and consideration of our request.

Sincerely,

Sheila Boamah, RN
PhD Candidate

Heather Laschinger, RN, PhD
Distinguished Professor, UWO

Western
Arthur Labatt Family
School of Nursing

Appendix D

Final Reminder Letter

The Influence of Transformational Leadership on Nurse-Reported Patient Safety Outcomes

Date:

Dear Nursing Colleague,

Approximately 8 weeks ago, a survey was mailed to you seeking your perspective on your unit Manager's leadership style, work environment, your job satisfaction and patient care outcomes. If you have already completed the survey please accept our sincere appreciation. If not, please take the time to do so today because your perspective is invaluable. It is only by hearing from nearly everyone surveyed that we stand to gain a broader perspective on the issue and truly capture Ontario clinical nurses' perspectives on their work environment and its effect on nurses and patients' well-being.

You can help by completing the enclosed survey, which will take approximately 15-20 minutes of your time. Your responses to the questions in the survey are vital because it stands to provide us important and useful insight in ways in which managers can create safe and healthy workplaces. Knowledge gained from this study may be useful for nurse managers, leaders and healthcare organizations to provide healthy work environment for nurses, foster clinical leadership practices, and improve nurse and patient outcomes.

There are no known risks to participate in this study. Please note that all data collected will remain confidential and accessible only to the investigators of this study. To participate in the study, we invite you to complete the enclosed survey booklet or the confidential online survey.

While you are under no obligation to participate, we strongly encourage you to do so. If you require any further clarification please do not hesitate to contact me at: XXX or my thesis Supervisor Dr. Heather Laschinger via email at: XXX.

Online survey link: https://uwo.eu.qualtrics.com/LeadershipSurvery

Thank you again for considering our request.

Sincerely,

Sheila Boamah, RN, PhD(c) Heather Laschinger, RN, PhD

Western
Arthur Labatt Family
School of Nursing

Appendix E

Draw Entry Ballot Form

The Influence of Transformational Leadership on Nurse-Reported Patient Safety Outcomes

Gift Draw Entry Form

I have read the letter of information for the study and agree to have my name entered into a draw for a prize of a $100 gift card.

Agree: _____ Disagree: _____

PIN #: _____ (on survey booklet)

Date: _____

All forms will be discarded after completion of the research study and prize draw. You will only be contacted by mail if you are a prize winner.

Appendix F

Questionnaires

Read each item carefully and determine how each statement fits the SUPERVISOR/ MANAGER that you work with most frequently. Please note that "manager" refers to the person to whom you report in your job and is the person who formally provides you your annual performance evaluation.

THE PERSON I AM RATING…

0 = Not at all	**1 = Once in a while**	**2 = Sometimes**	**3 = Fairly often**	**4 = Frequently, if not always**

1.	Instills pride in me for being associated with him/her.	0	1	2	3	4
2.	Goes beyond self-interest for the good of the group.	0	1	2	3	4
3.	Acts in ways that builds my respect.	0	1	2	3	4
4.	Displays a sense of power and confidence.	0	1	2	3	4
5.	Talks about his/her most important values and beliefs.	0	1	2	3	4
6.	Specifies the importance of having a strong sense of purpose.	0	1	2	3	4
7.	Considers the moral and ethical consequences of decisions.	0	1	2	3	4
8.	Emphasizes the importance of having a collective sense of mission.	0	1	2	3	4
9.	Talks optimistically about the future.	0	1	2	3	4
10.	Talks enthusiastically about what needs to be accomplished.	0	1	2	3	4
11.	Articulates a compelling vision of the future.	0	1	2	3	4
12.	Express confidence that goals will be achieved.	0	1	2	3	4
13.	Re-examines critical assumptions to question whether they are appropriate.	0	1	2	3	4
14.	Seeks differing perspectives when solving problems.	0	1	2	3	4
15.	Gets me to look at problems from many different angles.	0	1	2	3	4
16.	Suggests new ways of looking at how to complete assignments.	0	1	2	3	4
17.	Spends time teaching and coaching.	0	1	2	3	4
18.	Treats me as an individual rather than just as a member of a group.	0	1	2	3	4

19.	Considers me as having different needs, abilities, and aspirations from others.	0	1	2	3	4
20.	Helps me to develop my strengths.	0	1	2	3	4
21.	Provides me with assistance in exchange for my efforts.	0	1	2	3	4
22.	Discusses in specific terms who is responsible for achieving performance targets.	0	1	2	3	4
23.	Makes clear what one can expect to receive when performance goals are achieved.	0	1	2	3	4
24.	Expresses satisfaction when I meet expectations.	0	1	2	3	4
25.	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards.	0	1	2	3	4
26.	Concentrates his/her full attention on dealing with mistakes, complaints, and failures.	0	1	2	3	4
27.	Keeps track of all mistakes.	0	1	2	3	4
28.	Directs my attention toward failures to meet standards.	0	1	2	3	4
29.	Fails to interfere until problems become serious.	0	1	2	3	4
30.	Waits for things to go wrong before taking action.	0	1	2	3	4
31.	Shows that he/she is a firm believer in "If it ain't broke, don't fit it."	0	1	2	3	4
32.	Demonstrates that problems must become chronic before taking action.	0	1	2	3	4

Please rate the EXTENT to which the following is present in your current job:

1 = None	**2**	**3 = Some**	**4**	**5 = A Lot**

1.	Information about the current state of the hospital.	1	2	3	4	5
2.	Information about the values of top management.	1	2	3	4	5
3.	Information about the goals of top management.	1	2	3	4	5
4.	Specific information about things you do well.	1	2	3	4	5
5.	Specific comments about things you could improve.	1	2	3	4	5
6.	Helpful hints or problem solving advice.	1	2	3	4	5

7.	Time available to do necessary paperwork.	1	2	3	4	5
8.	Time available to accomplish job requirements.	1	2	3	4	5
9.	Acquiring temporary help when needed.	1	2	3	4	5
10.	Opportunity for challenging work.	1	2	3	4	5
11.	The chance to gain new skills and knowledge on the job.	1	2	3	4	5
12.	Tasks that use all of your own skills and knowledge.	1	2	3	4	5

Please rate the FREQUENCY of the following:

1 = Almost Never	**2 = Occasionally**	**3 = Some of the time**	**4 = Most of the time**	**5 = Almost Always**

1.	When I am concerned about the patient's well-being, I take risks by questioning orders and treatment.	1	2	3	4	5
2.	I am able to provide evidence based rationale for my clinical decisions.	1	2	3	4	5
3.	I engage in reflective practice and try to understand what went well and what did not.	1	2	3	4	5
4.	I negotiate with and support members of the interdisciplinary health-care team to help patients achieve their goals.	1	2	3	4	5
5.	I am enthusiastic and engaged when communicating with patients to achieve patient centered goals.	1	2	3	4	5
6.	I engage in meaningful conversations with colleagues to foster our ability to provide patient–centered care.	1	2	3	4	5
7.	I actively listen to colleagues' diverse points of view.	1	2	3	4	5
8.	I establish therapeutic relationships with patients and their families that are based on trust.	1	2	3	4	5
9.	I develop cooperative relationships with my peers and colleagues.	1	2	3	4	5
10.	I do my best to follow through on the promises and commitments that I make to patients.	1	2	3	4	5
11.	I try to ensure we work towards achievable goals, make concrete plans and establish measureable objectives in achieving clinical patient outcomes.	1	2	3	4	5

12.	I am committed to patient-centered care.	1	2	3	4	5
13.	I publicly acknowledge my colleagues who exemplify commitment to professional values.	1	2	3	4	5
14.	I provide positive feedback to colleagues when their actions contribute to the well being of patients and families.	1	2	3	4	5
15.	I find ways to celebrate colleagues' accomplishments.	1	2	3	4	5

Over the past year, how often would you say each of the following incidents has occurred involving YOU or YOUR PATIENTS (Circle the appropriate response for each item).

1 = Never	**2 = Rarely**	**3 = Occasionally**	**4 = Frequently**		
1.	Patient received wrong medication or dose.	1	2	3	4
2.	Patients fall with injuries.	1	2	3	4
3.	Pressure ulcers after admission	1	2	3	4
4.	Healthcare associated (nosocomial) infections.	1	2	3	4
5.	Complaints from patients or their families.	1	2	3	4

Please rate the EXTENT to which the following is present in your current job:

1 = Strongly Disagree	**2 = Disagree**	**3 = Hard to Decide**	**4 = Agree**	**5 = Strongly Agree**		
16.	I feel very satisfied with my job.	1	2	3	4	5
16.	I feel my co-workers are satisfied with their jobs.	1	2	3	4	5
16.	I feel I would be happy to work here until I retire.	1	2	3	4	5
16.	I feel that the health care facility provides a supportive work environment in which to work.	1	2	3	4	5

Demographics

PARTICIPANT INFORMATION QUESTIONNAIRE

Please fill out the blank that applies to you and your workplace. The information will help provide a general description of the group of participants in the study. All information will be kept confidential and only group data/ description will be presented in public forum.

1. **Gender:** ☐ Female ☐ Male

2. **Age** (In years): _____

3. **Education** (Highest Nursing Degree Received):
   - ☐ Diploma in Nursing
   - ☐ Bachelor of Nursing
   - ☐ Master's Degree
   - ☐ PhD

4. **Date of graduation of your first degree/ diploma in nursing (in Canada):**
   Month _____ Year _____

5. **Current employment status:**
   ☐ Full-time ☐ Part-time ☐ Casual

6. **Preferred employment status:**
   ☐ Full-time ☐ Part-time ☐ Casual

7. **Specialty area of your current unit:**
   ☐ Medical-Surgical ☐ Critical Care ☐ Maternal-Child
   ☐ Mental Health ☐ Geriatric/ Rehab ☐ Other: _____

8. **Years of experience in current specialty area:** _____

9. **Is your current unit your preferred specialty area?**
   ☐ Yes ☐ No, my preferred specialty area would be: _____

10. **Average hours worked per week:**
    ☐ Less than 20 hours ☐ 20-39 hours ☐ Over 40 hours

11. **How long have you worked**:

As an RN:	_____Years	_____ Months
As an RN at your current organization	_____Years	_____ Months
As an RN on your current unit	_____Years	_____ Months

12. **My immediate supervisor is:**
☐ A Registered Nurse ☐ Other, please explain: _____

13. **Number of years worked with current manager:** _____

14. **How frequently do you interact with your manager?**

0 = Never **1** = Once or Twice Per Year **2** = Once a Month
3 = Once Every Other Week **4** = 1 - 2 Times Per Week **5** = 3-4 Times Per Week
6 = At Least Once Per Day

15. **In general, how would you describe the quality of nursing care delivered to patients on your unit?**

1 = Excellent **2** = Good **3** = Fair **4** = Poor

Are there any further comments you would like to share with us?

_____
_____
_____
_____
_____
_____
_____

All responses are confidential. Thank you for your participation.

Appendix G

Copyright Release

Western

NURSING WORK EMPOWERMENT SCALE

I request permission to copy the Nursing Work Empowerment Scale as developed by Dr. Chandler and Heather K. Spence Laschinger. Upon completion of the research, I will provide Dr. Laschinger with a brief summary of the results, including information related to the use of the Nursing Work Empowerment Scale used in my study.

Questionnaires Requested:
Conditions of Work Effectiveness-I (includes JAS and ORS):
Conditions of Work Effectiveness-II (includes JAS-II and ORS-II): Yes
Job Activity Scale (JAS) only:
Organizational Relationship Scale (ORS) only:
Organizational Development Opinionnaire or Manager Activity Scale:
Other Instruments:

Please complete the following information:

Date: 10.01.2016
Name: Sheila Boamah
Title: The Influence of Transformational Leadership on Nurse-reported Patient Safety Outcomes
Address:
Phone:
E-mail:

Description of Study:

Permission is hereby granted to copy and use the Nursing Work Empowerment Scale.

Date: January 10, 2016

Sincerely,

Heather

Dr. Heather K. Spence Laschinger, Professor
School of Nursing, University of Western Ontario
London, Ontario, Canada

mind garden
Tools for positive transformation

Hi, Sheila

Thank you for shopping with Mind Garden!

ORDER DETAILS - PAYMENT COMPLETE

Order: DLMECSRPD
Completed on: 01/18/2016 14:28:30
Payment:

Product	Unit price	Quantity	Total price
Multifactor Leadership Questionnaire - License to Reproduce - Translation : English (default)	$1.10	100	$110.00
		Shipping	$0.00
		Total Tax	$0.00
		Total	$110.00

Appendix H

Correlational Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1.TRSFORM	1																																
2. IDA	.92**	1																															
3. IDB	.91**	.81**	1																														
4. IMOT	.87**	.74**	.80**	1																													
5. ISTM	.92**	.79**	.79**	.74**	1																												
6. ICON	.89**	.79**	.73**	.67**	.81**	1																											
7. TRSACT	.10	.04	.11*	.07	.08	.12*	1																										
8. CREW	.84**	.73**	.74**	.71**	.77**	.82**	.30**	1																									
9. MBA	-.04	-.08	-.00	-.06	-.03	-.02	.75**	.04	1																								
10. MBP	-.61	-.56**	-.53**	-.51**	-.59**	-.57**	.45**	-.55**	.15**	1																							
11. CWEQ	.62**	.54**	.58**	.55**	.56**	.56**	.15**	.58**	.09	-.41**	1																						
12. INFO	.29**	.23**	.29**	.29**	.27**	.22**	.15**	.25**	.14**	-.16**	.66**	1																					
13. SUP	.59**	.50**	.54**	.53**	.54**	.54**	.20**	.59**	.12*	-.38**	.74**	.36**	1																				
14. RES	.501**	.46**	.46**	.43**	.46**	.48**	.06	.48**	.02	-.38**	.74**	.26**	.45**	1																			
15. OPP	.41**	.38**	.38**	.33**	.37**	.39**	.03	.37**	-.02	-.28**	.73**	.24**	.35**	.45**	1																		
16. CLS	.17**	.13**	.19**	.08	.21**	.17**	.05	.16**	.08	-.15**	.25**	.25**	.16**	.16*	.18**	1																	
17. CPP	.13*	.11*	.13*	.06	.15**	.11*	.04	.10*	.05	-.08	.16**	.20**	.16**	.04	.06	.70**	1																
18. ISV	.18**	.17**	.19**	.11*	.19**	.15**	-.02	.13*	.04	-.18**	.24**	.21**	.12*	.13*	.22**	.81**	.50**	1															
19. ACT	.12*	.08	.14**	.06	.15**	.12*	-.08	.09	-.01	-.18**	.20**	.21**	.08	.10	.18**	.75**	.38**	.66**	1														
20. MOW	.08	.06	.10*	.00	.11*	.07	.03	.06	.09	-.09	.17**	.13**	.09	.11*	.13**	.74**	.44**	.53**	.61**	1													

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
21. HER	.14**	.08	.15**	.06	.17**	.15**	.14**	.18**	.10*	-.06	.17**	.18**	.13*	.07	.10*	.74**	.34**	.43**	.36**	.41**	1												
22. JOBSAT	.57**	.53**	.54**	.47**	.50**	.55**	-.05	.52**	-.12*	-.46**	.61**	.25**	.41**	.60**	.49**	.21**	.05	.24**	.21**	.19**	.14**	1											
23. JOBSAT1	.52**	.48**	.48**	.44**	.44**	.49**	-.03	.47**	-.10*	-.39**	.56**	.22**	.38**	.55**	.48**	.16**	.03	.19**	.18**	.15**	.09	.88**	1										
24. JOBSAT2	.47**	.44**	.43**	.38**	.42**	.44**	-.05	.43**	-.11*	-.37**	.50**	.21**	.33**	.51**	.41**	.12*	.01	.16**	.11*	.10*	.09	.81**	.66**	1									
25. JOBSAT3	.39**	.36**	.38**	.30**	.34**	.39**	-.08	.34**	-.10*	-.34**	.42**	.18**	.26**	.40**	.37**	.24**	.09	.26**	.23**	.26**	.13*	.85**	.70**	.51**	1								
26. JOBSAT4	.57**	.53**	.54**	.47**	.50**	.54**	-.02	.55**	-.08	-.46**	.58**	.26**	.43**	.59**	.41**	.18**	.04	.20**	.18**	.12*	.14**	.85**	.64**	.64**	.60**	1							
27. ADVERSE	-.13*	-.10	-.14**	-.13*	-.12*	-.11*	-.02	-.14**	.00	.10	-.14**	-.07	-.09	-.11*	-.13*	-.13*	-.09	-.16**	-.15**	-.15**	.01	-.28**	-.27**	-.22**	-.27**	-.19**	1						
28. MED	-.09	-.05	-.12*	-.13*	-.08	-.04	-.04	-.09	-.04	.07	-.13*	-.07	-.09	-.09	-.13*	-.11*	-.09	-.17**	-.13**	-.10*	.01	-.16**	-.15**	-.13*	-.16**	-.10	.72**	1					
29. FALL	-.08	-.08	-.08	-.08	-.04	-.06	.00	-.08	.02	.06	-.14**	-.15**	-.01	-.11*	-.13*	-.11*	-.08	-.14**	-.16**	-.18**	.04	-.21**	-.21**	-.15**	-.23**	-.13**	.73**	.51**	1				
30. PRESS	-.11*	-.07	-.08	-.08	-.11*	-.13**	-.06	-.14**	-.02	.07	-.10	-.02	-.09	-.05	-.11*	-.04	-.04	-.05	-.02	-.02	-.01	-.19**	-.19**	-.12*	-.19**	-.13*	.73**	.35**	.43**	1			
31. NOS	-.07	-.05	-.08	-.04	-.06	-.09	-.04	-.07	-.03	.04	-.03	-.00	-.05	-.02	-.03	-.05	-.02	-.06	-.10*	-.10*	.03	-.19**	-.19**	-.16**	-.19**	-.10	.79**	.40**	.41**	.60**	1		
32. COMP	-.13*	-.09	-.15**	-.13*	-.14**	-.07	.03	-.13*	.07	.11*	-.13*	-.03	-.10*	-.15**	-.09	-.15**	-.10*	-.16**	-.15**	-.17**	-.04	-.29**	-.25**	-.24**	-.23**	-.25**	.75**	.50**	.42**	.34**	.47**	1	
33. YRSMAN	.09	.10*	.11*	.05	.08	.06	.04	.08	-.024	.00	.04	.00	.04	.04	.06	.118*	.06	.10*	.12*	.13*	.06	.12*	.08	.14**	.08	-.03	-.02	-.05	-.05	-.01	.01	.21**	1

Note. **Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).
TRSFORM (transformational leadership); IDA (idealized influence-attributes); IDB (idealized influence-behaviour); IMOT (inspirational motivation); ISTM (intellectual stimulation); ICON (individualized consideration); TRSACT (transactional leadership); CREW (contingent reward); MBA (management-by-exception-active); MBP (management-by-exception-passive); CWEQ (structural empowerment); CLS (staff nurse clinical leadership); CPP (challenge the process); ISV (inspiring a shared vision); ACT (enabling others to act); MOW (modeling the way); HER (encouraging the heart); JOBSAT (job satisfaction); JOBSAT1-JOBSAT4 (the four items of job satisfaction); ADVERSE (nurse-assessed adverse patient outcomes); MED (medication error); PRESS (pressure ulcer); NOS (infection); COMP (complaints); YRSMAN (years of working with current manager).

Appendix I

Correlation post CFA analysis

There is a discrepancy when we compare the correlations between transactional (TRSACT) and transformational (TRSFORM) leadership based on the bivariate correlation analysis and the structural equation modeling (SEM) analysis (i.e., $r = .10$ in the bivariate correlation analysis and $r = .99$ in the SEM analysis). Recall that in the bivariate correlation analysis, TRSACT is calculated as the average of the three subscales (CREW, MBA, & MBP). In other words, equal weights are given to the three subscales. In the SEM analysis, the latent variable TRSACT is derived automatically by the SEM procedure which, similar to factor analysis, derives the best weights (or factor loadings) based on the data. It turns out that in the SEM analysis, the factor loadings are much different than what we would have expected. Instead of having three substantially high positive loadings that would suggest that all three subscales overlap with each other, we have one substantial positive loading (CREW), one substantial negative loading (MBP), and one loading that is very close to zero (MBA). This means that the three subscales, in the present sample do not correlate positively with each other. In fact the subscale that had a loading close to 0 does not seem to correlate with the other two scales. In the SEM analysis it is not given much weight. The fact that one subscale has a negative but substantial loading indicates that this scale does not correlate positively with the other subscale with the positive loading, but negatively.

It is important to note that the negative factor loading, and the loading close to zero for the two transactional leadership subscales are the main cause of the discrepancies found in the bivariate correlational analysis between TRSACT and TRSFORM leadership ($r = .10$). After the CFA, it became apparent that the original approach for calculating the TRSACT variable (i.e., adding the three subscales and dividing by three, noting that when we add three items, we are essentially giving these three items equal positive weights) is very different than the SEM solution which essentially uses one positive loading, one negative loading and a near zero loading). These different procedures produce very different TRSACT scores.

A negative loading on an item or subscale indicates that it contributes negatively to the latent variable. In the SEM analysis it is fine to leave it as is, but if one wants to

use the results of the SEM analysis to inform how to create total scale scores for other applications, then for those applications the item score would need to be recoded. This is not unlike what happens with scales that have items that are negatively-worded and must be reflected (or recoded) before a total score is calculated. For example, when an item or a scale is reflected its meaning also changes to the opposite (i.e., a passive leadership score becomes "lack of passivity / or active" leadership).

For example, if we use the information from the SEM for the best way to calculate the TRSACT variable, we would drop the subscale with the near zero loading. We would then reflect/recode the score of the subscale with the negative loading to create a new transactional leadership (TRSACTrev) variable. This can be done in two ways. Typically Likert items on scales of 0 to 4 would be recoded as (0=4) (1=3) (2=2) (3=1) and (4=0). Another alternative when there are several categories or the scores are not integers but include decimals is to take the highest possible score and add 1 and then subtract the original score. Let's say that a person has a score of 3.2 on a scale ranging from 0 to 4. The highest possible score is 4, and so we add 1, and this equals 5. We then subtract the original score from 5 (i.e., 5 – 3.2 = 1.8). The new recoded score is 1.8.

Appendix J

Multiple scatter plots of correlational pattern between major variables

Figure 1

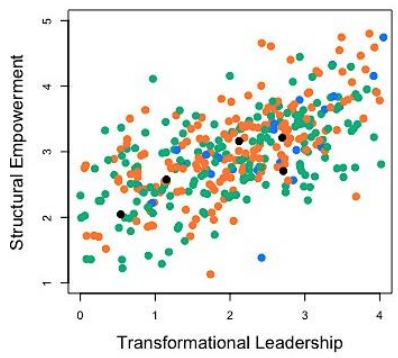


Figure 2

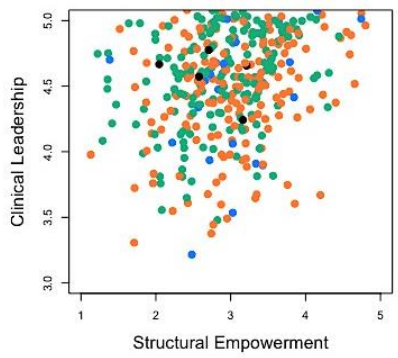


Figure 3

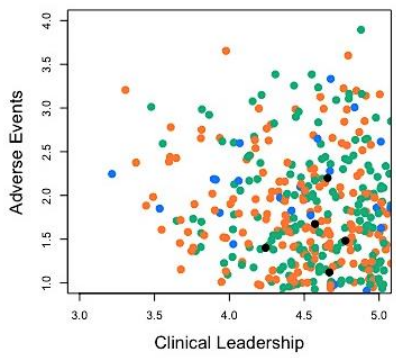


Figure 4

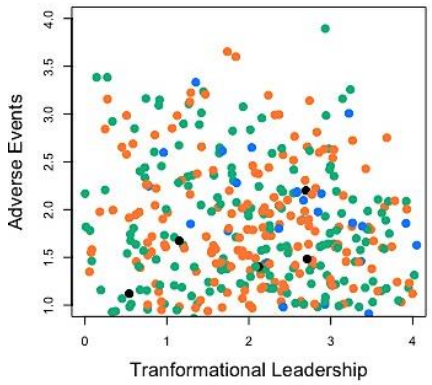
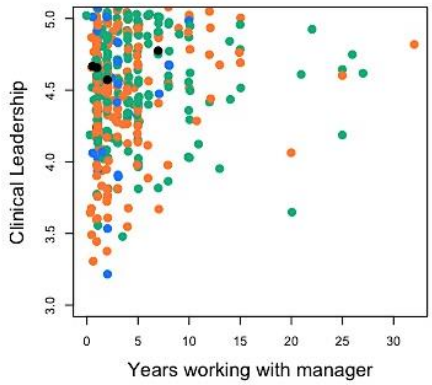


Figure 5



Note. The scatter plots of Figures 1-5 illustrate the pattern of relationship between two variables using individual data points. Colours indicate the level of education (*orange= Diploma; green= Baccalaureate; blue= Master of Nursing; black= PhD*). In Figure 1, it is observe that as one variable increases in value, the other variable also increases in value (weak positive correlation); In Figure 2, 3, 4 and 5, there is no evidence that the value of one variable is significantly influenced by changes in the value of the other variable.

Appendix K

Model Building

Stepwise approach to model building

MODEL 1 (Initial mediation model)

Structural path	*β*	*p*
Structural Empowerment <-- Transformational leadership	.396	.043
Structural Empowerment <-- Transactional leadership	.425	.064
Staff nurse clinical leadership <-- Structural Empowerment	.292	< .001
Job satisfaction <-- Staff nurse clinical leadership	.301	< .001
Adverse events <-- Staff nurse clinical leadership	-.204	.005

(χ^2= 1086.311, *df*= 370, *p*= 0.001, CFI = 0.885, TLI = 0.874, RMSEA = 0.067, SRMR = 0.138)

MODEL 2 (Model 1 with added path: JOBSAT ON CWEQ)

Structural path	*β*	*p*
Structural Empowerment <-- Transformational leadership	.464	.027
Structural Empowerment <-- Transactional leadership	.338	.101
Staff nurse clinical leadership <-- Structural Empowerment	.263	< .001
Job satisfaction <-- Staff nurse clinical leadership	.064	.186
Adverse events <-- Staff nurse clinical leadership	-.204	.005
Job satisfaction <-- Structural Empowerment	.794	< .001

Note. CWEQ = structural empowerment; JOBSAT = job satisfaction
(χ^2= 879.655, *df*= 369, *p*= 0.001, CFI = 0.918, TLI = 0.910, RMSEA = 0.055, SRMR = 0.057)

MODEL 3 (Model 2 with added path: ADVERSE ON TRSFORM)

Structural path	*β*	*p*
Structural Empowerment <-- Transformational leadership	.472	.024
Structural Empowerment <-- Transactional leadership	.332	.105
Staff nurse clinical leadership <-- Structural Empowerment	.259	< .001
Job satisfaction <-- Staff nurse clinical leadership	.059	.221
Adverse events <-- Staff nurse clinical leadership	-.177	.015

Job satisfaction <-- Structural Empowerment	.803	< .001
Adverse events <-- Transformational leadership	-.117	.049

Note. ADVERSE = adverse events; TRSFORM = transformational leadership
(χ^2= 875.689, *df*= 368, *p*= 0.001, CFI = 0.919, TLI = 0.910, RMSEA = 0.055, SRMR = 0.051)

MODEL 4 (Model 3 with control variable)

Structural path	*β*	*p*
Structural Empowerment <-- Transformational leadership	.470	.024
Structural Empowerment <-- Transactional leadership	.334	.103
Staff nurse clinical leadership <-- Structural Empowerment	.248	< .001
Job satisfaction <-- Staff nurse clinical leadership	.063	.192
Adverse events <-- Staff nurse clinical leadership	-.176	.015
Job satisfaction <-- Structural Empowerment	.802	< .001
Adverse events <-- Transformational leadership	-.116	.049
CLS <-- Years working with current manager	.125	.012

Note. CLS = staff nurse clinical leadership
(χ^2= 959.046, *df*= 427, *p*= 0.001, CFI = 0.915, TLI = 0.908, RMSEA = 0.053, SRMR = 0.053)

MODEL 5 – Final model (only significant paths)

Structural path	*β*	*p*
Structural Empowerment <-- Transformational leadership	.786	< .001
Staff nurse clinical leadership <-- Structural Empowerment	.269	< .001
Adverse events <-- Staff nurse clinical leadership	-.158	.030
Job satisfaction <-- Structural Empowerment	.824	< .001
Adverse events <-- Transformational leadership	-.121	.046
CLS <-- Years working with current manager	.121	.013

Note. CLS = staff nurse clinical leadership
(χ^2= 959.309, *df*= 428, *p*= 0.001, CFI = 0.915, TLI = 0.908, RMSEA = 0.052, SRMR = 0.053)

Table 15

Detailed Comparison of Model Fit for Hypothesized Model and Final Model

Model	χ^2	*df*	RMSEA	CFI	TLI	SRMR
1. Model 1 (Initial mediation model)	1086.311	370	.067	.885	.874	.138
2. Model 2 (with added direct path) (JOBSAT <-- CWEQ)	879.655	369	.055	.918	.910	.057
3. Model 3 (with added direct path) (ADVERSE <-- TRSFORM)	875.689	368	.055	.919	.910	.051
4. Model 4 (with control variable) (CLS <-- YRSMAN)	959.046	427	.053	.915	.908	.053
5. Final model (only significant paths) (Figure 7)	959.309	428	.052	.915	.908	.053

p< .001. ADVERSE = adverse events; CWEQ = structural empowerment; JOBSAT = job satisfaction; TRSFORM = transformational leadership; YRSMAN = years of working with current manager

Curriculum Vitae

Name: Sheila A. Boamah

Post-secondary Education and Degrees:
2017, The University of Western Ontario – PhD in Nursing
2007, University of Windsor – Master of Nursing
2005, University of Windsor – Bachelor of Science in Nursing (honors)

Professional Affiliations:
College of Nurses of Ontario
Registered Nurses Association of Ontario
Sigma Theta Tau International, Iota Omicron Chapter & Tau Upsilon Chapter
Nursing Leadership Network of Ontario
Nursing Research Interest Group
Academy of Management

Honours and Awards:

2016 – 2017	TD Meloche Monnex Scholarship, Canadian Nurses Foundation
2016	Research Grant, Iota Omicron, Sigma Theta Tau International
2016	Doctoral Student Award, Irene E. Nordwich Foundation
2016	Graduate Scholarship, Nursing Research Interest Group
2016	Research Award, Nursing Leadership Network of Ontario
2016	Research Grant, University of Toronto, Nursing Health Services Research Unit
2015 – 2016	Ontario Graduate Scholarship
2014 & 2016	Graduate Student Travel Award, Western University, Faculty of Health Sciences
2013 & 2014	Research Grant, Registered Nurses Association of Ontario
2013	Outstanding Abstract Award, Ryerson University, Daphne Cockwell School of Nursing
2012 – 2016	Western Graduate Research Scholarship
2005	Bursary for Academic Achievement, University of Windsor
2005	Dean's Honour List, University of Windsor

Related Work Experience:

2012 – 2016	Research Associate, Western University, Faculty of Health Sciences, London, ON.
2016	Research Associate, Western University, Faculty of Social Science, London, ON.
2014 – 2016	Faculty Instructor, Fanshawe College, London, ON.
2013 – 2014	Teaching Assistant, Western University, London, ON.
2010 – 2012	Research Assistant, McMaster University, Hamilton, ON.
2005 – 2007	Research Assistant, University of Windsor, Windsor, ON.

Selected Publications:

Boamah, S. A., Read, E. A., & Laschinger, H. K. (in press). Factors influencing new graduate nurse burnout development, job satisfaction and patient care quality: A time-lagged analysis. *Journal of Advanced Nursing*. Advance online publication. doi: 10.1111/jan.13215

Armah, F. A., **Boamah, S. A.**, Quansah, R., Obiri, S., & Luginaah, I. (2016). Working conditions of male and female artisanal and small-scale goldminers in Ghana: Examining existing disparities. *Extractive Industries & Society, 3*(2), 464-474.

Armah, F. A., **Boamah, S. A.**, Quansah, R., Obiri, S., & Luginaah, I. (2016). Unsafe occupational health behaviours: Understanding mercury-related environmental health risks to artisanal gold miners in Ghana. *Frontiers in Environmental Science*, *4*, 29.

Boamah, S. A., Amoyaw, J., & Luginaah, I. (2015). Explaining the gap in antenatal care services utilization between younger and older mothers in Ghana. *Journal of Biosocial Science*, *48*(03), 342-357.

Boamah, S. A. & Laschinger, H. (2015). The influence of areas of worklife fit and work-life interference on burnout and turnover intentions among new graduate nurses. *Journal of Nursing Management*, *24*(2), E164-174. doi:10.1111/jonm.12318

Boamah, S. & Laschinger, H. K. (2014). Engaging new nurses: the role of psychological capital and workplace empowerment. *Journal of Research in Nursing, 20*(4), 265-277.

Selected Presentations:

Boamah, S. A., Read, E., & Laschinger, H. K. (2016). The effect of authentic leadership on nurse burnout, job satisfaction and patient care quality.
Presented at:

- Sigma Theta Tau International Honor Society of Nursing 29th Annual Research Conference. London, ON.
- Faculty of Health Sciences Research Day, University of Western Ontario. London, ON.

Boamah, S. A. (2015). The influence of transformational leadership on nurse-reported patient safety outcomes.
Presented at:

- Nursing Research Forum, Arthur Labatt Family School of Nursing, University of Western Ontario.

Boamah, S. A., & Laschinger, H. K. (2015). The Influence of Areas of Worklife fit and Work-life Interference on Burnout and Turnover Intentions among New Graduate Nurses.
Presented at:

- Faculty of Health Sciences Research Day, University of Western Ontario.

Boamah, S. A., Amoyaw, J., & Luginaah, I. (2015). Explaining the gap in antenatal care services utilization between younger and older mothers in Ghana. Faculty of Health Sciences Research Day, University of Western Ontario.
Presented at:

- Faculty of Health Sciences Research Day, University of Western Ontario.

Boamah, S. & Laschinger, H. K. (2014). Engaging new nurses: the role of psychological capital and workplace empowerment.
Presented at:

- St. Michael's Hospital – Knowledge Translation and Exchange Program Day Conference. Toronto, ON.
- Daphne Cockwell School of Nursing 6th Annual Research Day Conference. Toronto, ON.
- International Nursing Administration Research Conference (INARC). Baltimore, Maryland. US.