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Leadership, Nursing, and Patient Safety Within a Hospital-based Learning Organization

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Graduate Program in Education

A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Education

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LEADERSHIP, NURSING, AND PATIENT SAFETY WITHIN A HOSPITAL-BASED LEARNING ORGANIZATION

Abstract

Within the complex and often changing Canadian landscape of healthcare, patient safety remains at the forefront of hospital corporate priorities and strategic plans. Drawing data from an emergency department in one Ontario-based hospital that was supported by 180 nursing staff and a three-member front-line leadership team (two coordinators and a manager), this study provides further insight into aspects of how safe patient care can be provided. An exploratory mixed-methods case study was used to understand how and why leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization. It was hypothesized that nursing staff who report to front-line leadership who demonstrate authentic leadership attributes, work within a department that evidences a heightened patient safety culture. It was also hypothesized that nursing staff who report to front-line leadership who demonstrate authentic leadership attributes, experience less adverse events or ‘near misses’ in relation to patient safety issues and thereby work in an organizational context of improving patient safety outcomes.

The conceptual framework utilized was based on learning organization theory and authentic leadership theory. Measurements used included the *Hospital Survey on Patient Safety Culture* (HSOPSC) ($N=47$) for nursing staff and the *Authentic Leadership Questionnaire* (ALQ) ($N=1$) for leadership. The HSOPSC was divided into two safety culture measures, four leadership measures, and two patient outcome measures. Inter-correlation matrices were performed for all measure-to-measure and item-to-item correlations to examine the relationship between individual leadership attributes, unit specific patient safety culture, and patient safety outcomes. To obtain a deeper understanding of nurses’ perception of formal leadership and patient safety, an interview process was performed with a select number of nursing staff ($N=2$).

Data from the correlational analysis, constant comparative analysis as well as the ALQ, the hospital's *Adverse Events Management System* (AEMS), and organizational documents were used for triangulation purposes.

Findings showed a significant relationship between authentic leadership attributes and a heightened patient safety culture as well as a significant relationship between authentic leadership attributes and adverse events or 'near misses' related to patient care. It was further identified that nurses embrace front-line leadership which demonstrate attributes based on authentic leadership practice. As well, interviews and survey data revealed that front-line leadership's intentions and actions impacted the nurses' abilities to learn and develop professionally and provide an environment and care needed for patient safety. With ongoing financial constraints, competing organizational priorities, and the quest for quality and safety in patient care, this study helped identify leadership attributes that not only promote but have a favourable impact on patient safety culture and patient safety outcomes in a hospital-based learning organization.

Keywords: Healthcare, learning organization, patient safety, mixed-methods, patient safety culture, patient safety outcomes, authentic leadership

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Table of Contents

Abstract	i
Acknowledgements	iii
Table of Contents	iv
List of Tables	x
List of Figures	xi
List of Appendices	xii
Axiology	xiii
Chapter 1	1
Introduction	1
1.1 Problem of Practice	4
1.2 Research Question	5
1.3 Definition of Terms	8
1.4 Overview of Findings	12
1.5 Significance of Study	12
1.6 Assumptions and Limitations	14
Chapter 2	16
Review of Literature	16
2.1 Leadership Styles	17
2.1.1 Leadership Style Comparisons	21
2.1.2 Authentic Leadership	22
2.2 Ethical Considerations	23
2.3 Patient Safety Outcomes	25

2.3.1 Leadership Style and Patient Safety	26
2.4 Leadership Position	27
2.4.1 Patient Safety Culture	28
2.4.2 Patient Safety Climate	29
2.5 Patient Safety Culture/Climate and Patient Safety Outcomes	30
2.6 Summary	33
2.7 Conceptual Framework	35
2.8 Authentic Leadership Theory	35
2.8.1 Components of Authentic Leadership	35
2.8.2 Relevance to Nursing Practice	38
2.9 Learning Organization	38
Chapter 3	42
Methodology	42
3.1 Epistemological Assumptions	44
3.1.1 Philosophical Foundation	44
3.1.2 Theoretical Lens	45
3.2 Research Design	45
3.2.1 Case Study	45
3.2.2 Correlational Research	46
3.2.3 Mixed-Methods Study	447
3.3 Healthcare and Mixed-Methods Research	48
3.4 Limitations and Challenges	49
3.4.1 Construct Validity	49

3.4.2 External Validity	51
3.4.3 Reliability	51
3.5 Participants	52
3.6 Materials	53
3.6.1 Overview	53
3.7 Quantitative Measures	53
3.7.1 Nursing Survey	54
3.7.2 Leadership Survey	55
3.7.3 Adverse Event Reporting System	57
3.8 Qualitative Measures	58
3.8.1 Semi-Structured Interviews	59
3.9 Procedures	60
3.9.1 Ethical Procedures	60
3.9.2 Participant Population	60
3.9.3 Contact	60
3.9.4 Adverse Event Reporting	62
3.10 Data Analysis	62
3.10.1 Quantitative	62
3.10.2 Qualitative	64
3.10.3 Triangulation	65
3.11 Summary	66
Chapter 4	67
Results	67

4.1 Quantitative Results	67
4.1.1 Hospital Survey on Patient Safety Culture	67
4.1.2 Authentic Leadership Questionnaire	74
4.1.3 Adverse Event Management System	75
4.2 Qualitative Results	78
4.2.1 Modified Constant Comparative Data Analysis	78
4.2.2 Core Theory Model	79
4.2.3 Emotions	80
4.2.3.1 Ethics of Care	80
4.2.3.2 Vision Alignment	81
4.3.1.3 Spectrum and Validation	82
4.2.4 Actions/Operations	83
4.2.4.1 Role/Activity	83
4.2.4.2 Delivery	84
4.2.4.3 Presence	85
4.2.5 Outcomes Impact	86
4.2.5.1 Accountability/Control	86
4.2.5.2 Process	86
4.2.6 Perceptions	87
4.2.6.1 Responsibility and Fairness	87
4.2.6.2 Process Change	88
4.2.6.3 Transparency	88
4.2.7 Influence	89

4.2.7.1 Abstract Presence	89
4.2.7.2 Organizational Presence	90
4.2.7.3 External Presence	91
4.2.8 Identification of Self	91
4.2.8.1 Communication	91
4.2.8.2 Presence	92
4.2.8.3 Autonomy	93
4.2.8.4 Reward of Work	93
4.2.8.5 System Changes	94
4.2.8.6 Department Flow	94
4.2.8.7 Learning Organization	95
4.2.8.8 Patient Care	95
4.2.8.9 Action	95
4.3 Summary	96
Chapter 5	97
Discussion of Findings	97
5.1 Purpose of Study	97
5.2 Leadership Attributes and Patient Safety Culture	98
5.3 Leadership Attributes and Patient Safety Outcomes	102
5.4 Limitations	106
Chapter 6	108
Conclusions, Implications, and Recommendations	108
6.1 Review	108

6.2 Conclusions and Implications	112
6.3 Recommendations for Future Studies	115
6.4 Ethics/Morals	115
6.5 Self-Awareness	116
6.6 Larger Study	116
6.7 Summary	117
References	118
Appendices	132
Curriculum Vitae	157

List of Tables

Table 1: Methodology Outline	44
Table 2: Definition of Terms	6
Table 3: Defined Items of Outreptot	68
Table 4: Defined Items of Culttot	68
Table 5: Means and Standard Deviations for HSOPSC Survey Items and Measures	70
Table 6: Correlations, Significance, and Post-hoc Power of Patient Safety Outcome Items	72
Table 7: Correlations, Significance, and Post-hoc Power of HSOPSC Measures	72
Table 8: Correlations of Patient Safety Culture Items	148
Table 9: Patient Safety Culture Items <i>p</i> Values	151
Table 10: Patient Safety Culture Items Post-hoc Power Values	154
Table 11: Authentic Leadership Questionnaire Examples	74
Table 12: Authentic Leadership Questionnaire Raw Scores	75
Table 13: AEMS Tallies of Level of Incidences	75
Table 14: AEMS Subcategories Tallies, Means, and Standard Deviations	75
Table 15: Example of Matrix of Coding	79
Table 16: Research Sub-questions and Conclusions	109

List of Figures

Figure 1: Convergent Parallel Mixed-Methods Design	3
Figure 2: Core Theory Model	80

List of Appendices

Appendix A: Hospital Survey on Patient Safety	132
Appendix B: Authentic Leadership Questionnaire Permission Letter	138
Appendix C: Western University Ethics Review Board Approval	139
Appendix D: Email Scripts to Participants	140
Appendix E: Letter of Information	144
Appendix F: Table 8, Table 9, Table 10	148

Axiology

I believe our lives are shaped by the experiences we share with others. Whether that is by accident, intention, or circumstance, the impact is notable. Throughout my EdD journey, I have been impacted by leaders, peers, nurses, patients, and family. I have been the researcher trying to understand how and why things happen and a family member of a patient trying to understand the same thing. I have been a front-line leader whom this research project investigates and a patient who is invariably impacted by their actions. I have come to realize the sincere complexity of learning organizations and the desire and necessity to be a part of one. I recognize the impact words and actions can have on an individual, culture and organization. Leadership can come in many forms and the impact of their actions and intentions is pronounced. I walk away from this program with a clearer sense of purpose and understanding of Educational Leadership.

Chapter 1

Introduction

Preventable patient-related ‘adverse events’ in hospitals, have been a topic of discussion and debate amongst health professionals and the media since the 2000 landmark study, *To Err is Human*, in the United States of America by the Institute of Medicine (IOM) because of the inherent link with patient safety (Kohn, Corrigan, & Donaldson, 2000). In the Canadian Adverse Events Study (2004), it was found that 7.5% of patients in acute care hospitals experienced one or more adverse events during their stay (Baker et al., p.1683). In one year, those adverse events amounted to an estimated cost of \$1.1 billion on the Canadian healthcare system (Etchells, et al., 2012, p.2). Hence, for the past 15 years, considerable focus has been placed on the potential role of leadership within Canadian-based hospitals, to improving patient safety factors. With the significant and growing concern about patient safety, contemporary research has often employed quantitative measures to represent various indicators of leadership ‘success’ in hospitals. Few studies have attempted to understand how and why leadership has an impact that contributes directly or indirectly to reducing adverse events amongst patients.

Exploring the relationship between nursing staff and their front-line leadership will hopefully provide an understanding of the leadership attributes required to contribute to a heightened patient safety culture. Front-line leadership in this study is considered to be the coordinators and manager within the department. In addition, exploring how the relationship between nursing staff and their front-line leadership impact the number of adverse events and ‘near misses’ will provide a further understanding of how elements of leadership contribute to patient safety outcomes. Qualitative insights from this study may provide instructive findings for those currently working in hospitals and guide future studies in patient safety and care. Identifying the potential impact of front-line leadership in a hospital that is structurally designed

as a learning organization, may help to provide direction for other hospitals which are re-evaluating their organizational structure and culture with a view on focusing more on patient safety.

This research study was nested in an exploratory, mixed-methods case study (Yin, 2009; 2014) and explored “how and why leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization?” A convergent parallel mixed-methods design was used (see Figure 1), in which qualitative and quantitative data were collected in parallel, analyzed separately, and then merged (Creswell & Clark, 2011). The conceptual framework that the study utilized was based on authentic leadership theory (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008) and a learning organization theory (Senge, 2006) within the complex environment of a hospital setting. The study drew data from an emergency department in one Ontario-based hospital (Organization X). The department chosen for this study was supported within the unit by 180 nurses, 2 coordinators, and 1 manager. Measurements used included the *Hospital Survey on Patient Safety Culture* (HSOPSC) (Appendix A) for nursing staff with a response rate of 26.1% ($N= 47$) and the *Authentic Leadership Questionnaire* (ALQ) (Appendix B) for leadership with a response rate of 33.3% ($N=1$). The HSOPSC was divided into two safety culture measures, four leadership measures, and two patient outcome measures. The items in each measure were determined based on the original intent of each individual question, and the safety culture dimensions previously categorized by the psychometric results of the HSOPSC pilot study in 2003 (Sorra & Dyer, 2010). Inter-correlation matrices were performed for all measure-to-measure and item-to-item correlations to examine the relationship between individual leadership attributes, unit specific patient safety culture, and patient safety outcomes.

Additional methodological approaches were used to corroborate with the quantitative data and obtain a more in-depth analysis and understanding of the underlying cultural values, assumptions, and patient safety factors (Sorra & Dyer, 2010). Specifically, a deeper understanding of nurses' perception of formal leadership and patient safety was obtained through an interview process with a select number of nursing staff ($N=2$). Data from the ALQ and the hospital's *Adverse Events Management System* (AEMS) were used during triangulation of all data sources. Triangulation, namely "the convergence of data collected from different sources to determine the consistency of a finding" (Yin, 2014, p.241) was performed in an attempt to expose possible connections between leadership attributes and the level of patient safety within the department.

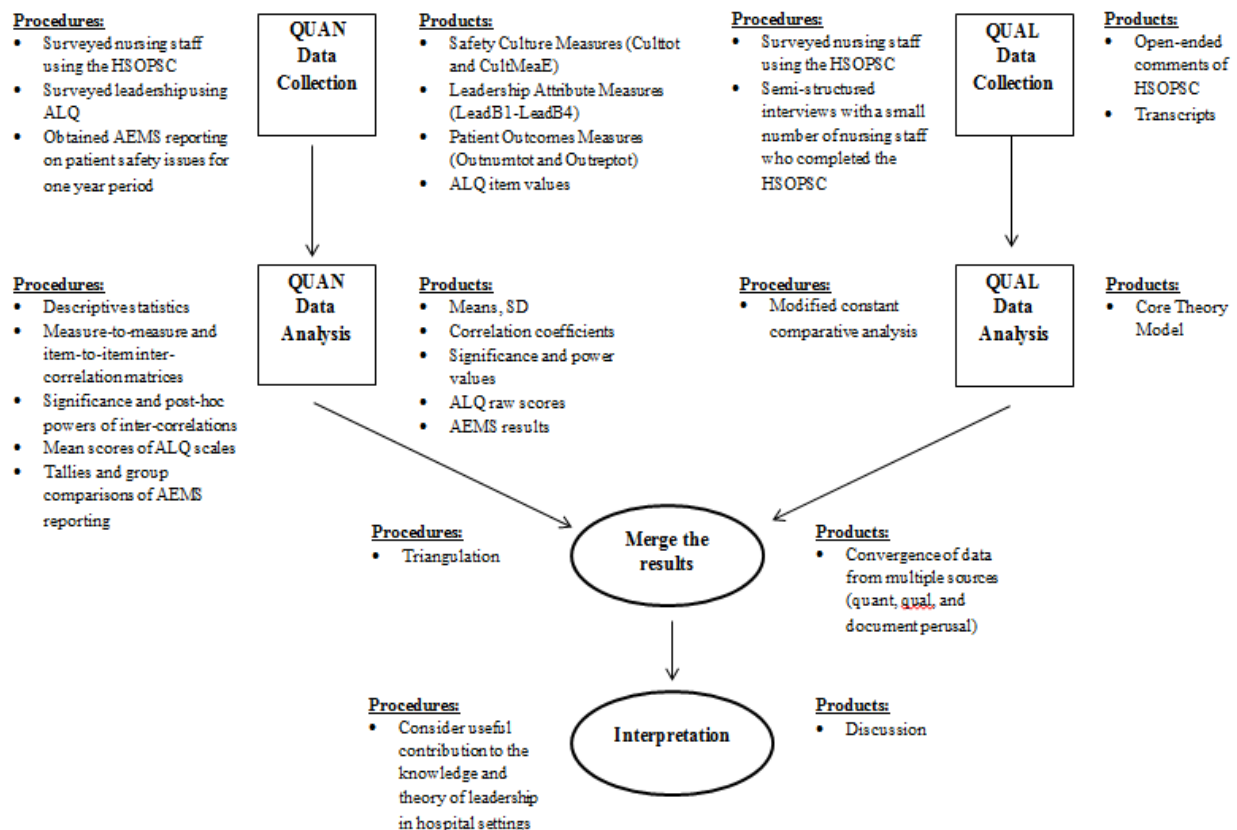


Figure 1. Convergent Parallel Mixed-Methods Design

1.1 Problem of Practice

Multiple factors have been analysed as components of improved patient safety, including organizational structures and cultural influences, among other factors (Groves, 2014). Patient safety is defined as, “the avoidance, prevention, and amelioration of adverse outcomes or injuries stemming from the process of healthcare” (McFadden, Henagan, & Gowen, 2009, p. 391). The need for a patient safety culture for improved patient safety outcomes has been agreed upon in numerous studies (Goh, Chan, & Kuziemy, 2013; McFadden, et al.; Rosen, Singer, Zhao, Shokeen, Meterko, & Gaba, 2010). The safety culture of an organization is defined by Singer, Lin, Falwell, Gaba, and Baker (2009) as:

the values shared among organization members about what is important, their beliefs about how things operate in the organization, and the interaction of these with work unit and organizational structures and systems, which together produce behavioural norms in the organization that promote safety. (p.400)

The definition by Singer et al. (2009) demonstrates the need for individual, departmental, and organizational collaboration for an effective patient safety culture to be enacted in a healthcare organization. As well, a safety culture requires a sharing of safety values amongst (employee) members and the tangible results of any such shared goals or vision to be apparent in the forms of behaviour and structure (Groves, 2014). Existing research has demonstrated that the characteristics of a safety culture, including teamwork, a needed learning environment, supportive leadership, communication, and outcome measurements, are pivotal in preventing adverse events (Accreditation Canada, 2012; Hanrahan, Kumar, & Aiken, 2010; Rosen et al., 2010; Sammer, Lykens, Singh, Mains, & Lackan, 2010; Squires, Tourangeau, Laschinger, & Doran, 2010). Accreditation Canada (2012) argues that organizations achieve excellence in

safety and quality only when the components of a safety culture are fully integrated into structures, processes, outcomes, and services.

Learning organizations as posited by Levitt and March (1988) nearly three decades ago, provide the context for developing a safety culture and have been accepted by many healthcare institutions as being part of or integrated throughout their organizational structure. This notion of a learning organization typically is included either formally through their mission and vision statements or informally through their actions such as in the policies of the United Kingdom National Health Service (Davies & Nutley, 2000) and St. Joseph's Healthcare, London (McLaughlin & Kernaghan, 2015, June 17). Learning organizations are “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (Senge, 2006, p.3). A patient safety culture and learning organization, in effect, require the support of leadership in their development. As described by Senge (2006), “leaders are designers, teachers, and stewards” (p.321). With the raft of and often diverse requirements expected of an effective leader, the style and attributes of each leader may nonetheless influence the extent of implementation and success of a learning organization (Mulford, Silins, & Leithwood, 2004) and patient safety culture.

1.2 Research Question

This exploratory mixed-methods case study addressed the overall guiding question, “how and why do leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization?” Attributes are defined in this context as a quality or feature regarded as a characteristic or inherent part of someone. This is consistent with the use of the term attributes by Kouzes and Posner (2012) in *The Leadership Challenge*. This case study sought to clarify the

impact between specific leadership attributes and a patient safety culture as well as the impact between specific leadership attributes and patient safety outcomes through addressing the following research sub-questions:

- 1) What is front-line leadership's role in creating a patient safety culture and preventing adverse events and 'near misses' in a healthcare-based learning organization?
- 2) What is nursing's role in creating a patient safety culture and preventing adverse events and 'near misses' in a healthcare-based learning organization?
- 3) Is there a significant relationship between specific leadership attributes and a patient safety culture?
- 4) Is there a significant relationship between specific leadership attributes and adverse events or 'near misses'?
- 5) In what ways do semi-structured interviews and additional sources provide further corroboration of the statistical findings between authentic leadership attributes and patient safety culture and patient safety outcomes, via an integrative mixed-methods analysis?

The need for this research is based on the necessity for hospitals, as complex organizations, to obtain a deeper understanding of the roles of leadership in contributing to the culture and outcomes needed to improve so far as patient safety is concerned.

In the 21st Century, organizations cannot survive and improve themselves with only their previous knowledge; they require the ability to continuously learn and create in often chaotic and changing conditions (Alipour, Idris, & Karimi, 2011). Effective leadership's facilitation in this process is of great interest to many beyond the research community, including employers, and governments. Whilst it can be demonstrated that existing literature has attempted to establish

connections between patient safety culture and patient safety outcomes, there is scant evidence of the ability to identify the significance of leadership's impact on both. Although a few studies (eg. Creswell & Clark, 2011; Squires et al., 2010) have attempted to demonstrate a specific leadership style's influence on organizational culture, bi-variate data analysis alone limited their ability to perform triangulation in attempt to obtain greater validity for their conclusions.

This research focused on leadership attributes within the framework of the authentic leadership theory. Authentic leadership is defined as:

a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development. (Walumbwa, et al., 2008, p.94)

Other forms of leadership are discussed within the literature review together with their potential limitations in being able to closely provide or attend to the requirements of leadership within a healthcare setting. Considered by Avolio and Gardner (2005) as the "root construct" (p.328), the authentic leadership core, at least in part resembles many frameworks of the leadership theories discussed in the literature review. In contrast, however, authentic leadership extends beyond the capacities assigned to many leadership theories because of its unique composition of self-awareness and commitment to creating or building an ethical climate. Given many current social, political, and organizational leadership ethical breaches frequently drawn to light through media (Cummings, 2009), concerns for honesty, integrity, and transparency in leader-follower relationships are indicative of the potential value of authentic leadership and hence, relevant to the current study.

1.3 Definition of Terms

For the purpose of this study, the following terms are defined.

Adverse event. This type of event is defined as “an unintended, unexpected, and undesirable negative outcome resulting from healthcare management (Hospital Intranet, personal communication, 2015).

Attributes. This term is considered in this study as a quality or feature regarded as a characteristic or inherent part of someone (Kouzes & Posner, 2012).

Authentic leadership. This type of leadership is defined as:

a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development. (Walumbwa, et al., 2008, p.94)

Bi-variate. As defined in the *Oxford Dictionary of Statistics* (Upton & Cook, 2008), bi-variate data are data involving two sets of related values.

Case Study. In this investigation, case study is described as an empirical inquiry “that investigates a contemporary phenomenon in depth and in its real-world context” (Yin, 2014, p.237).

Constant comparative analysis. For the purpose of this study, this concept is defined as the constant interaction of data, analysis, and theory resulting in the development of theory from the data being examined (Glaser & Strauss, 1967; Strauss & Corbin, 1990).

Construct Validity. [In case study] For the purpose of this study, construct validity is considered, “the accuracy with which a case study’s measures reflect the concepts being studied” (Yin, 2014, p.238).

Correlation. In this study, correlation refers to “a quantitative measure of the degree of correspondence” (Gay, Mills, & Airasain, 2012, p. 10).

Correlational research. A type of research that “involves collecting data to determine whether, and to what degree, a relationship exists between two or more quantifiable variables” (Gay et al., 2012, p. 203).

Ethics. In this study, ethics is considered to mean, “disposition or character, customs, and approved ways of acting” (Shapiro & Stefkovich, 2013, p.3).

Ethic of care. An ethic of care or ethics of care is considered the embodiment and enactment of the notions of good, within the core of practice (Benner, Sutphen, Leonard-Kahn, & Day, 2008).

External validity. [In case study] External validity is considered, “the extent to which the findings from a case study can be analytically generalized to other situations that were not part of the original study” (Yin, 2014, p. 238).

Front-line leadership. In the context of this study, front-line leadership is considered to be the coordinators and manager within the department studied.

Interpretivist lens. For the purpose of this study, it is defined as the method by which to understand phenomena through accessing the meanings that participants assign them (Rowlands, 2005).

Laissez-faire. This style means ‘let it be’, and is considered a non-transactional non-transformational approach which manifests as a lack of deliberate enactment of leadership (Antonakis, Avolio, & Sivasubramaniam, 2003).

Learning organization. This type of organization is defined for this study as an organization, “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (Senge, 2006, p.3).

Modified constant comparative analysis. For the purpose of this study, this modified version is defined based on the implementation and timing of analysis. The research protocol is initially implemented, followed by data collection, and upon completion of the data collection process data analysis is performed.

Near miss. This type of event is defined as an event or situation that could have resulted in harm, but did not, either by chance or timely intervention (Hospital Intranet, personal communication, 2015).

Nursing staff. In the context of this study, this participant population is considered to be Registered Nurses with their primary point of employment as a nurse within the emergency department of the organization studied.

Patient safety. This term is defined as, “the avoidance, prevention, and amelioration of adverse outcomes or injuries stemming from the process of healthcare” (McFadden et al., 2009, p. 391).

Patient safety event. In respect to this study, this concept is considered an event or situation that either did or could have impacted a patient negatively (Hospital Intranet, personal communication, 2015).

Pragmatism. In research, pragmatism is considered a practical and outcome-oriented method of inquiry that is based on action and leads to further action and elimination of doubt (Johnson & Onwuegbuzie, 2004).

Reliability. In respect to this study, this term is defined as the consistency of the measurement and ability to measure with minimum error (Roof, 2014).

Reliability. [In case study] In this study, reliability is defined as “the consistency and repeatability of the research procedures used in a case study” (Yin, 2014, p.240).

Safety climate. In this study, safety climate is defined as, “the perceptions and attitudes of the organization’s workforce about surface features of the culture of safety in hospitals at a given point of time” (Singer et al., 2009, p.400).

Safety culture. The safety culture of an organization is defined as:

the values shared among organization members about what is important, their beliefs about how things operate in the organization, and the interaction of these with work unit and organizational structures and systems, which together produce behavioural norms in the organization that promote safety. (Singer et al., 2009, p.400)

Senior leadership. In the context of this study, senior leadership is considered any formal leadership in the hospital that the front-line leadership reports to within the organizational flowchart.

Transactional leadership. This leadership style is defined as “an exchange process based on the fulfillment of contractual obligations” (Antonakis et al., 2003, p. 265) between the leader and follower.

Transformational leadership. This leadership style is defined as a relational leadership style in which followers have trust and respect for their leader, have participative decision

making practices, and are motivated to go above and beyond normal work expectations to achieve organizational goals (Wong, Cummings, & Ducharme, 2013; Wong & Giallonardo, 2013).

Triangulation of results. This phrase is defined as “the convergence of data collected from different sources to determine the consistency of a finding” (Yin, 2014, p.241).

Type I error. A type I error is defined as, “the rejection by the researcher of a null hypothesis that is actually true” (Gay et al., 2012, p.633).

Type II error. A type II error is defined as, “the failure of a researcher to reject a null hypothesis that is really false” (Gay et al., 2012, p.633).

Validity. In respect to this study, this term is defined as an instrument’s ability to measure the characteristics intended (Roof, 2014).

1.4 Overview of Findings

This exploratory mixed-methods case study demonstrated a significant relationship between specific authentic leadership attributes and a patient safety culture and patient safety outcomes within a hospital-based learning organization. The study further identified leadership’s direct and indirect impact on nursing staff and their consequential influence on a patient safety culture and patient safety outcomes. Finally, this research study provided an example of how a qualitative approach can provide corroboration for predictive correlational data in a mixed-methods study thereby providing an in-depth analysis of a small yet influential sample.

1.5 Significance of Study

The current research findings underscore the view that hospital environments are complex systems in which the relationship between leadership and patient outcomes cannot be shown by a simple set of bi-variates (Squires et al., 2010). As defined in the *Oxford Dictionary*

of Statistics (Upton & Cook, 2008), bi-variate data are data involving two sets of related values. The current study on how and why leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization extends beyond the limitations of relying on bi-variate data alone because of the mixed-methods methodology that was employed which captured both quantitative and qualitative data.

For researchers, the use of quantitative and qualitative data in this exploratory mixed-methods case study provides a glimpse into the extensive, and at times, intricate relationships of leadership, culture, and outcomes and how they co-exist and affect one another in a healthcare environment. For the healthcare community, this study provides insight into potential factors for managing and maintaining a patient safety culture and resultant impacts. With healthcare stakeholders existing in a context of current budgetary restraints and increasing healthcare costs, the identification of possible markers of efficiency and effectiveness are a potential gain and therefore of interest to hospital providers.

Current research in the area of effective leadership and patient safety focuses on experimental designs and is limited in the depth and breadth of understanding the impact of leadership (McFadden et al., 2009; Squires et al., 2010; Wong & Giallonardo, 2013). As noted above, the research design supported the research quest for pursuing ‘how’ and ‘why’ questions.

It is hoped that some of the findings will be useful or transferable to many similar contexts. For example, particular conclusions from this study could shape decisions or practices in similar units within the Ontario hospital system and may also be broadly relevant to ‘high performance’ learning organizations in other healthcare facilities, such as 24-hour medical clinics.

In the current area of study involving leadership, culture, and patient outcomes within a learning organization, there is great potential for advancing knowledge. Due to the complexity of these study components individually and when taken together, any further understanding of ‘what works’ and ‘what works well’ is potentially helpful (Yin, 2009). The significance of advancing knowledge not only potentially influence parts of the research world but also hospital organizations and patients themselves. Transfer of knowledge is key for continued learning and advancement in the healthcare sector. It is hoped that this type of research will provide a framework and impetus for further advanced research in the development of theory-into-practice in the area of leadership, culture, and patient outcomes within learning organizations.

1.6 Assumptions and Limitations

It was assumed by the researcher that all participants were honest and forthcoming with answers in all components of the research study. Nonetheless, it was recognized there could be a limitation in terms of the accuracy of at least some of the information given by participants. For the survey provided to front-line leadership, being able to have confidence in both data collection and confidentiality was stressed by the researcher to the participants. Concerns about the leadership participants’ not providing in-depth answers due to potential employer and constituent consequences (whether real or imagined) must be recognized and at least theoretically acknowledged.

In theory, nursing staff may have felt pressed to answer in particular ways based on experiences of or perceptions about leaders and/or leadership. As a result, nursing staff may not have provided answers grounded on a self-reflective process that ideally was needed to more fully understand the current culture. This onus to reduce the prospect of a participant feeling vulnerable (because of providing honest responses) rested at least in part with the researcher. To

obviate that risk to data contamination, the researcher engaged in thorough pre-planning and ‘ethically-aware’ (Gay, Mills, & Airasian, 2012) conduct when negotiating and undertaking the interviews.

It is also recognized that there were limitations in the researcher’s ability to obtain an appropriate quantity and quality of data. Due to the fact that the survey and interview invitations to participate were ultimately subject to the discretion of each potential participant, a potential limitation in numbers was ultimately largely out of the researcher’s control. As well, there was a potential for underreporting of occurrences in the AEMS by nursing staff. For accurate information, nursing staff needed to be abiding by the imposed protocol of the healthcare organization being studied and use the AEMS for reporting all near misses and adverse events. If the nursing staff had been limiting their reporting based on a fear of punishment from their organization, as demonstrated in a previous cross sectional survey study of 1033 healthcare providers by Sexton, Thomas, and Helmreich (2002), or lack of interest or time, such underreporting may be an issue. To limit the potential skew in results from underreporting, data from the AEMS were triangulated with other data obtained in the study.

The following chapters will detail the study: Chapter 2 provides an in-depth review of relevant literature associated with the problem of practice, Chapter 3 provides details on the methodology used, Chapter 4 details all findings, Chapter 5 offers a detailed discussion of the results, and finally in Chapter 6, conclusions from the research are outlined together with key implications of findings, and recommendations for future studies within this field.

Chapter 2

Review of Literature

In this chapter, a review of literature provides an overview of relevant themes identified in the contemporary research with respect to the current problem of practice, as well as the conceptual framework chosen for this study. This includes prevalent leadership styles, ethical considerations, patient safety outcomes, patient safety culture, patient safety climate, authentic leadership theory, and a learning organization theory.

Initially, several leadership styles with significant presence and importance within the field of interest will be reviewed for relevance and critique. Some less frequently encountered styles, including authentic leadership, are identified on the basis of their relevance to the current scope of interest. Secondly, the literature review discusses ethical considerations as they relate to nursing and leadership practice. Thirdly, patient safety outcomes and the influences of the particular enactments of leadership will be reviewed. Subsequently, leadership position influences on a patient safety culture and patient safety climate are considered. In respect to this review, safety climate is referred to as “the perceptions and attitudes of the organization’s workforce about surface features of the culture of safety in hospitals at a given point of time” (Singer et al., 2009, p.400). Next, the influences of a patient safety culture or patient safety climate on patient safety outcomes will be examined. Finally, a similar study utilizing mixed-methods is reviewed and compared for similarities and differences to the current study put forth.

In summary, this review demonstrates the continued gaps in related research associated with the current problem of practice and the usefulness of a mixed-methods case study (such as the one undertaken for this doctoral investigation) for providing further insight into this line of inquiry.

2.1 Leadership Styles

The overall premise of leadership used in this thesis is best captured by the late, but influential leadership researcher, William Foster's (2005) claim that leadership "meets some kind of modern need, a deep desire both to be in control of our circumstances and to alter them for the better" (p.27). Kouzes and Posner (2012) argue that, within the history of leadership research, a common thread of four attributes, namely being honest, forward-looking, competent, and inspiring, have been described repeatedly in regard to markers of successful leaders. These are broadly consistent in the acclaimed works of Stogdill (1974) in regard to the capabilities of successful leaders including the ability to exhibit interpersonal, technical, administrative, and intellectual capacities. Frequently identified leadership attributes or styles within the healthcare field, to a greater or lesser extent, support this notion and successful leaders having a common interest in the greater good (Benner,2008). Nonetheless, differences in the enactment or practice of leadership appear are often context-dependent and progressing goals related to a greater good goal can be both involved and difficult.

A review of literature demonstrated a defined focus on specific leadership styles related to leadership in healthcare. These well-known styles included transformational, transactional, and laissez-faire. Transformational leadership style is defined as a relational leadership style in which followers have trust and respect for their leader, have participative decision making practices, and are motivated to go above and beyond normal work expectations to achieve organizational goals (Bass & Bass, 2008; Wong et al., 2013; Wong & Giallonardo, 2013). In broad terms, such organizational leaders are identified to have a disposition for social dominance, the capacity to serve as a role model, and a confidence in their ability to influence others (Bass & Bass, 2008, Spinelli, 2006). Transformational leadership can be employed in a variety of organizational settings. For example, Leithwood and Sun (2012) undertook a study of

79 unpublished studies about transformational school leadership using meta-analytic review techniques (p.391). Transformational school leadership practices including setting directions, developing people, redesigning the organization, improving the instructional program aggregate and related practices, were identified to all have at least moderate effect sizes, namely a common statistical measure shared among studies, on school conditions (.34 to .47) (Leithwood & Sun, 2012, p. 403). Setting directions (eg. shared vision) and developing people were identified as the most powerful leadership practices influencing school culture (Leithwood & Sun, 2012). Peter Drucker (2001) argued that although contexts vary- necessitating different leadership practices, the core elements to leadership were common. Followers who work under and believe in this type of leadership are elevated to not only assume responsibility for goals they know they have the ability to achieve but also to change themselves and abilities for 'the greater good' and gain of eg. students; patients; colleagues.

Ethical conduct, which was at one stage identified as a potential gap or absence within transformational leadership theory, has in the last decade, been positioned under the concept of moral leadership within the framework of transformational leadership (Stewart, 2006). The concept of moral leadership relates to the ability of a transformational leader to evolve morally him or herself while at the same time motivating others through a common vision. In the end, the follower takes on the role of the leader and the leader into the role of a moral agent (Stewart, 2006).

Critiques of transformational leadership include those which challenge the concept of power employed by transformational leaders, the style's use of optimistic wording, and the generalized broad overlapping leader 'competencies' (Cummings, 2009; Gunter, 2001). Transformational leadership has been viewed as offering an illusion of power to their

subordinates rather than actual empowerment (Gunter, 2001). A major component evident in transformational leadership theory is the ability of a leader to directly influence an individual follower. Based on these same components, identifying a leader's ability to influence a group or organizational process is weak (Bass & Bass, 2008; Yukl, 2006). Leaders practicing a transformational leadership style have been identified as being unable to foster organizational learning in dyadic and group relations compared to individual settings limiting their effectiveness in large organizational settings (Gronn, 1997; Yammarino, Spangler, & Dubinsky, 1998). Criticism has also been written in the literature in relation to the 'conceptual overlap' of behaviours such as visionary, change agent, trust builder, and support (Cummings, 2009). These are potentially reasonable criticisms if articles on transformational leadership are intended to be understood by readers and/or by leaders who want a heightened understanding of how to lead well.

Transactional leadership style is built on a premise of the contingent reward (from completing a task or assignment) for the followers. Typically, transactional leadership requires leaders to set objectives, monitor, and control outcomes (Antonakis et al., 2003; Bass & Bass, 2008). Rewards or pay-offs are given to followers based on their actions and abilities to perform a specific task or tasks. In that respect, transactional leaders deal with the basic needs of the organization versus the needs of the followers (Schratz, 2013; Stewart, 2006).

Transactional leadership includes elements of contingent reward behaviour, management by exception, and action management by exception (Bass & Bass, 2008; Yukl, 1999).

Contingent reward is based on the leader's ability to assign tasks and arrange for psychological or material rewards for the followers carrying out the assignment (Bass & Bass, 2008). If a task is completed successfully, the reward is given, if not, failure and potential psychological or

material punishment may be issued. Management-by-exception involves a leader's initiation of action only after the identification of a deviant act or error made by the follower in regard to performance (Bass & Bass, 2008). Based on the context in which transactional leadership is used, elements of transactional leadership can display translational, transformational, (contingent reward behaviour) and laissez-faire components (passive management by exception) (Bass & Bass, 2008; Yukl, 1999). Without distinct components from other leadership styles, transactional leadership can be difficult to differentiate and use explicitly. Whilst transactional leadership is obviously useful in some hospital settings, another key limitation in terms of its efficacy lies in its inability to relate to or address many of the intrinsic reasons why most healthcare professionals are drawn to their work (McGuire & Kennerly, 2006; Merrill, 2015). In general, transactional leadership does not embed or recognize this intrinsic commitment very well.

Laissez-faire, which means 'let it be', is a non-transactional approach which truly reflects a lack of leadership. The significance of this type of leadership is that the leader actively chooses to not take action (Bass & Bass, 2008). For example, the leader avoids making decisions, responsibilities are ignored, and authority is not present (Antonakis et al., 2003; McGuire & Kennerly, 2006). In essence, the leader makes little or no effort to help the followers satisfy their needs and as a result no attempt to help them grow (Onorato, 2013). A distinct gap in follower development and the leader - follower relationship is apparent in such instances, and can often leave followers, eg. colleagues or employees, dissatisfied because of lack of clear and shared direction from the individual who is supposed to be a formal leader.

One limitation identified within educational leadership research (which typically focuses on teachers and principals, that, as with healthcare providers including nurses, are largely

intrinsically motivated) has been directly related to the applicability of any one of the leadership styles into practice. Mulford (2008) believed that the difficulty lies in the leaders' ability to enact only one style. He argued that when used in practice, most leaders adopt a range of leadership styles based on the changing contextual needs. The idea of "one size fits all" leadership style restricts and distorts leadership behaviour in ways that are not conducive to school development and improvement (Mulford, 2008). The criticism by Mulford (2008) can rightly be extended to other non-school settings: The enactment of leadership in most organizations is complex and situational, leaving leaders having to be highly responsive and so a strictly formulaic way of leading in such settings is unlikely to be sufficient.

2.1.1 Leadership Style Comparisons. Two descriptive correlational studies were performed evaluating transformational, transactional, and laissez-faire style leadership in nurse managers (Casida & Pinto-Zipp, 2008; McGuire & Kennerly, 2006). The first of those two studies by McGuire and Kennerly (2006) focused on the impact of leadership style of 63 nurse managers on the organizational commitment of staff nurses and their respective acute care nursing units within the Midwest region of the United States of America (p.182). In the second study, Casida and Pinto-Zipp (2008) similarly chose a sample of 37 nurse managers and their staff ($N=278$) from four hospitals within the New Jersey region of the USA but, in contrast to McGuire et al., focused their efforts on the relationship of leadership style and organizational culture (p.10).

Both studies used a highly regarded instrument, namely the *Multifactor Leadership Questionnaire* (MLQ) to evaluate leadership traits based on the manager and staff perceptions. The MLQ instrument is considered the benchmark measure of transformational leadership as well as assessing the full range of leadership behaviours (Antonakis, Avolio, &

Sivasubramaniam, 2003). In regard to organizational commitment and culture, data were obtained in the McGuire and Kennerly (2006) study from the *Organizational Commitment Questionnaire* and for Casida and Pinto-Zipp (2008) with the *Denison's Organizational Culture Survey*.

Results from the individualized studies, namely McGuire and Kennerly (2006) and Casida and Pinto-Zipp (2008), supported a more transformational environment (idealized influence) for staff commitment and organizational culture respectively ($r = 0.393, p < .01$; $r = 0.46-0.51, p < .01$) (p.183; p.12). Traits of idealized influence included strong ethical and moral values established within leadership and effectively modeled to the staff. McGuire and Kennerly's (2006) study revealed no significant correlation between nurse managers' self-assessed leadership characteristics and the degree of organizational commitment demonstrated by the staff. It is suggested by the authors that these findings may have occurred based on the difference of perception between leadership and staff nurses. Potential influences included role differences, work experiences, and previous interactions with other management personnel (McGuire & Kennerly, 2006).

2.1.2 Authentic Leadership. Wong and Giallonardo (2013) surveyed 600 nurses with a response rate of 48%, randomly achieved from a registry list of practising nurses in Ontario (p.744). Information was obtained through the following means: the nurses' perception of manager authentic leadership with the *Authentic Leadership Questionnaire* (transparency, moral/ethical, balanced processing, self-awareness), trust in the immediate manager with Mayer and Gavin's 2005 *Trust in Management Scale* (ability, benevolence, and integrity), *Areas of Work Life Scale* (workload, control, rewards, community, fairness, and values), and nurse-assessed adverse patient outcomes (Sochaliski, 2001). Sobel tests confirmed significant

mediation effects of areas of work life on authentic leadership ($z = -2.72, p < .01$) and trust ($z = -2.85, p < .01$) in respect to adverse patient outcomes (p.748). It was further identified that nurses reporting authentic leadership practices and greater work life scale (person-job match) were also reporting a lower incidence of adverse patient outcomes.

Walumbwa, Luthans, Avey and Oke (2011) employed structural equation modeling on data from a study of 146 working groups ($n = 526$ and immediate supervisors) within a large bank in the Southwest United States (p.12). Authentic leadership practices demonstrated significant positive links with collective psychological ‘capital’ (efficacy, optimism, hope, and resilience) ($\beta = .37, p < .01$) and group trust ($\beta = .27, p < .01$) (p.17). In turn, collective psychological ‘capital’ and group trust were mediating factors between authentic leadership and citizenship behaviour and performance ($\beta = .40$ and $.19$ respectively) and ($\beta = .30$ and $.48$ respectively) (Walumbwa et al., 2001, p.17). This research supports the notion of a potentially favourable impact from authentic leadership and psychological capital on desired outcomes of a group environment. However, it is acknowledged that these results may not be found in a similar study that is nested in a healthcare setting.

In comparison to authentic leadership practices, recent studies have focused extensively on leadership theories that are limited in the application on group influences, follower needs, and organizational learning. It is also recognized that within the current research, generalized authentic leadership practice is of focus rather than detailed attributes specific to this style. For example, in their work, Gardner, Cogliser, Davis, and Dickens (2011) evaluated a decade of work on authentic leadership and offered a view from that regarding a potential agenda for research moving forward. Gardner et al. (2011) advised, “more empirical research is also needed

to explore the relationships of specific components of authentic leadership and various antecedents and outcomes” (p.1140).

2.2 Ethical Considerations

Ethics of care, as described by Shapiro and Stefkovich (2013), places the emphasis on care being a foundational element of a learning organization. Described by Benner, Sutphen, Leonard-Kahn, and Day (2008) in regard to nursing practice, an ethic of care is “the instantiation of the responsibilities, concerns, and commitments of the profession” (p.474). In respect to the nursing profession, it is believed by Benner et al. (2008) that biomedical ethics is an essential standard but on its own is not sufficient. Bioethics has “provided a critical, remedial external voice and disciplined thinking about patients’ rights and healthcare professionals’ duties and obligations to patients” (p.475) yet requires the need to be more effective and critical within its advocacy and social role (Benner et al., 2008). This type of ethical decision making is key and central to the nursing profession. Identified within the works of Pellegrino (1995) and cited by Benner (1997), the “notions of the good are essential to clinical and ethical comportment and reasoning, and because it is impossible to separate clinical and ethical reasoning in a practice” (p.59). The notion of ‘good’ is best described by Cathcart (2008), as it “involves having a genuine commitment to the patient, a realistic understanding of what constitutes the patient’s world, and an emotional investment by the nurse in what happens to the patient and family entrusted to her care” (p.88).

In respect to leadership, leaders are therefore required to listen to others when facing or making moral decisions thereby creating a relationship and connection with their colleagues and other constituents rather than a traditional hierarchical model (Shapiro & Stefkovich, 2013). Emotional contexts and overlays relate to the ethics of a profession. As suggested by Foster

(2005), “leadership is founded on the fact of moral relationships; it is intended to elevate people to new levels of morality” (p.39). In essence, Foster (2005) was arguing that leadership not only requires personal moral character but also the requirement of community awareness and action.

Silen, Kjellstrom, Christensson, Sidvenwall, and Sivantesson (2012) studied the potential components of an ethical climate through an exploratory study with 20 nurses within four different wards in two hospitals in Sweden (p.503). From analysis of the interviews, two main themes emerged: ‘meeting needs’ and ‘sharing responsibility’. A positive ethical climate was perceived by nurses when the diverse needs of patients, next of kin, and nurses were met by the actions of staff, colleagues, managers and external healthcare professionals. Sharing responsibility included the ability to work as a member of a team to solve difficult situations and taking responsibility for their own actions (Silen et al., 2012). Overall, a sense of giving good care and ethical care were identified by nurses as components of an ethical climate.

2.3 Patient Safety Outcomes

Patient safety outcomes have typically been identified in healthcare literature by self-reported incidences of adverse events and near misses (Agnew, Flin, & Mearns, 2013; Brown & Wolosin, 2013; Wong & Giallonardo, 2013). Stang, Wingert, Hartling, and Plint (2013) undertook a systematic literature review of 11,624 citations involving the prevalence, preventability, severity, and types of adverse events in the Emergency Department (p.2). In that study, a pronounced range in the proportion of patients in the Emergency Department with an adverse event related to care (0.16% to 6.0%) was identified as well as reported preventability of an adverse event (36% to 71%) (Stang et al., 2013, p.3). The most commonly-reported adverse events within an emergency department setting were management of illness-related events, diagnosis-related events, medication-related events, and procedural issues (Stang et al., 2013).

With use of regression modeling, Singer et al. (2009) identified that hospitals with personnel (including physicians, senior managers, and all other hospital employees) reporting more incidences of fear of shame (Incident Rate Ratio (IRR) = 1.050, $p < .05$) and fear of blame (IRR = 1.013, $p < .05$) had significantly greater risk of patient safety incidences (p.410). Specifically, frontline personnel's perception of there being a greater fear of shame in the hospital was associated with a greater risk of experiencing a patient safety incident (IRR = 1.048, $p < .05$) (p.410). It therefore is further supported within the literature that culture has an impact on patient safety.

2.3.1 Leadership style and patient safety. Wong et al., (2013) undertook a systemic review of literature using eight online bibliographic databases identifying, in total, 20 studies satisfying their inclusion criteria and focus on the relationship between nursing leadership practices and patient outcomes. Transformational leadership was the most frequently applied leadership theory in the reviewed studies. It was recommended by the reviewers that further research attention should be extended to other leadership theories including authentic leadership, based on the relevance to nursing and healthcare and potential mediating processes between leadership and outcomes (Wong et al., 2013). In respect to adverse events, Wong et al. (2013) noted that the most identified relationship was between leadership and medication errors (four out of the five studies) (p.717). Transformational leadership, manager support, and trust in leadership were all associated with lower medication errors (Wong et al., 2013).

The significance of relational qualities of leadership on patient safety was ultimately identified by Squires et al. in 2010. Prior to reaching that conclusion, the authors created and tested a model explaining the influence of interactional justice and resonant leadership to nurse and patient outcomes. Resonant leadership in that context was described as behaviours that were

consistent with a high level of emotional intelligence. For example, the authors suggested that interactional justice was synonymous with perceptions of fairness in the hospital setting (Squires et al., 2010). Six-hundred nurses were chosen randomly to participate from the College of Nurses of Ontario registration with a 49.4% response rate as part of the study by Squires et al. (2010, p.918). Each participant was asked to complete six instruments (*Interactional Justice Scale, Resonant Leadership Scale, Leader-Member Exchange Scale (LMX 7), Safety Climate Survey, Perceived Nursing Work Environment (PNWE), and Maslach Burnout Inventory – Emotional Exhaustion (MBI-EE) Subscale*). Large effect sizes with significance of $p < .05$ were noted between resonant leadership and leader-nurse relationship (0.52), leader-nurse relationship and safety climate (0.53), and work environment and safety climate (0.66) (p. 922). Safety climate effect on medication errors was small (-0.22) (p. 922). Quantitative analysis through this study by Squires et al. (2010) identified the bi-variate relationship between the leader and follower as well as the leader-follower relationship and safety climate. A key message from this study for leaders in those types of settings includes understanding the potential role of having high-quality relationships through resonant leadership practices with staff in order to create a positive safety climate and work environment.

2.4 Leadership Position

The perceptions and influences of unit leadership and front line staff compared to senior leadership were discussed in three recent literature sources (Dirks & Ferrin, 2002; Rosen et al., 2010; Singer et al., 2009). For example, Singer et al. (2009) surveyed 18,223 healthcare professionals across the USA (p.410) and Rosen et al. (2010) surveyed 4,581 healthcare professionals within Veterans Affairs (VA) hospitals across the USA (p.597) both using the *Patient Safety Climate in Healthcare Organizations Survey*. Both Singer et al. (2009) and Rosen

et al. (2010) identified that the perceptions and concerns of front line staff were more closely oriented to the alignment of patient safety indicators than those of the senior managers. In one way, that is understandable based on the direct patient contact experienced daily front line staff, such as nurses, comparative to the limited direct patient experience had by management. Dirks and Ferrin (2002) examined the findings of four decades of research on trust in leadership through an extensive literature review including a total of 106 independent samples with 27,103 individuals (p.618). Through a moderator analysis for referent of trust, the authors identified that there was greater trust in front-line leaders (eg. supervisor, work group leader) who demonstrated ‘transformational’ characteristics by their followers than in senior organizational leaders (eg. executive leadership, collective set of leaders) with the same leadership traits. In that regard, it could be concluded that front line staff (including but not limited to nurses) and front-line leadership appear to have greater influence on each other and the unit than senior leadership. As well, it can be argued that front line staff and front-line leadership perform in front of one another, thereby potentially demonstrating their capacities for more often than senior organizational leaders do with for example unit staff or leadership.

Ginsburg et al. (2010) examined the relationship between organization-level patient safety leadership and patient safety behaviours in organizations. Data were used from two cross-sectional surveys conducted in an acute care hospital in Ontario, Canada. Patient Safety Officers ($N = 54$) were asked to provide data on organizational learning responses following patient safety events and Patient Care Managers ($N= 282$) were asked for their views on formal and informal leadership practices (p.610). Pearson correlations of significance ($p<0.5$) were identified between formal organizational leadership for safety and major (0.39), moderate (0.43) and minor event learning (0.29) (Ginsburg et al., 2010, p.620). No significant correlations were identified

with informal leadership. However, formalized leadership practices impacted the associated learning and potential culture of learning. The identified need for organizational learning within a patient safety culture further supports the notion and necessity of this formalized leadership practice for a positive culture.

2.4.1 Patient safety culture. A transformational style of senior leadership personnel was further identified as an influence on patient safety culture through McFadden, Henagan, and Gowen's (2009) study. The authors tested a systematic process they developed to improve patient safety involving top leadership (CEO) and behaviours related to 'high-reliability' organizations (learning organizations). Leaders ('quality management' directors, risk managers, director of nursing, information systems directors) in 212 hospitals across the USA responded to a number of questionnaires designed to evaluate transformational leadership, patient safety culture, patient safety initiatives and patient safety outcomes (p.396). A final model of the patient safety chain was identified with excellent fit to the data ($\chi^2(295, N=212) = 470.64$, $p < .001$; comparative fit index = .95; Bentler-Bonnett Non-Normed Fit Index = .94) (p. 397). Direct effects were identified between transformational leadership and patient safety culture (.56), patient safety culture and patient safety initiatives (.52), and patient safety initiatives and patient safety outcomes (.73) (McFadden et al., 2009, p. 399). A partially mediated relationship was identified only between transformational leadership and patient safety initiatives through patient safety culture (.18) (p.399). Therefore it is recognized that transformational qualities of leadership have the potential to favourably influence the culture of an organization associated with patient safety and this culture in turn has a positive influence on patient safety outcomes.

2.4.2 Patient Safety Climate. Yule, Flin, Davies, McKee (2008), and the *Creating Safe Places Project Team*, examined the relationship between the Chief Executive Officers' (CEO)

transformational leadership style and safety climate in two healthcare examples involving a sample of eight CEO's direct reports ($N = 20$) from health boards in Western Canada and five CEO's executive directors ($N = 15$) from National Health System (NHS) Trusts of England in the United Kingdom (p.821). Similar to findings from McFadden et al. (2009), each leader's direct reports participated in the surveys. The online survey distributed consisted of three questionnaires relating to leadership, safety climate, and safety priorities of the CEO. Pearson correlations demonstrated a significant correlation between what was deemed to be elements of transformational leadership (mean score) and safety climate ($r = .52, p < .01$) (p.822).

2.5 Patient Safety Culture/Climate and Patient Safety Outcomes

A predictive research method employed by Hofmann and Mark (2006) on 1,127 nurses from 42 hospitals across the USA within a three month time period, demonstrated that a hospital's safety climate could predict specific adverse events including medication errors, nurse back injuries, urinary tract infections, patient satisfaction, patient perceptions of nurse responsiveness, and nurse satisfaction (p.854).

Specific aspects of a patient safety culture were identified as significant influences on patient safety outcomes through the work of Wang et al. (2014). These authors studied nurses' perception of patient safety culture and frequency of adverse events. Four hundred and sixty three nurses participated from seven hospitals within the Guangzhou's Districts of China. In the multiple logistic regression models subsequently employed on the survey data, it was identified that organizational learning-continuous improvement correlated with 3 out of 7 adverse events; frequency of event reporting, feedback and communication about error, and hospital management support for patient safety correlated with 2 out of 7 adverse events; and supervisor expectations and actions promoting safety, non-punitive response to error and hospital 'handoffs'

and transitions correlated with 1 adverse event (variance of $r/OR = 0.249$ to 0.739) (Wang et al., 2014, p.1118). What those findings show is that, as with the North American studies listed, elements associated with a patient safety culture have an impact on the patient safety outcomes and a more positive culture contributes to a decrease in deleterious patient safety events and improved patient safety outcomes.

Similar to the study by Wang et al. (2014), items considered part of the hospital patient safety culture were evaluated for significant correlations with adverse events in two recent studies by Brown and Wolosin (2013) and Mardon, Khanna, Sorra, Dyer, and Famolaro (2010). Both were large-scale data collection studies from unit level USA based hospitals ($N= 9$, $N = 179$) using the *Hospital Survey on Patient Safety Culture* (HSOPSC) (p.63; p.227). Brown and Wolosin (2013) elected to use *The Collaborative Alliance for Nursing Outcomes* (CALNOC) safety indicators and Mardon et al. (2010) chose Patient Safety Indicators (PSI's) calculated on discharge of each patient for the adverse event measurement. Brown and Wolosin (2013) demonstrated a significant weak negative correlation ($r = -.327$, $p < .05$) between teamwork within units and reported patient falls (adverse event) (p.68). Mardon et al. (2010) identified multiple safety culture items (handoffs and transitions, frequency of events reported, teamwork across units, and HSOPSC dimension average) had significant negative correlations with the patient safety indicator composite ($r = -.15$ to -0.41) (p.230). The key lessons identified by Brown and Wolosin (2013) and Mardon et al. (2010) (and supported by the previous work of Wang et al. (2014)) identified the influence of key patient safety culture items on patient safety outcomes, addressing the need for a patient safety culture for improved patient outcomes.

In the study by Brown and Wolosin (2013), the number of adverse events related to patient safety events, were calculated solely on the voluntary submission and opinions from the

nursing staff of each institution. In regard to the adverse event data collection in Mardon's et al. (2010) study, the patient safety indicators were collected through a database. It was identified by Mardon et al. (2010) that this collection technique may have counted conditions present on admission as actual 'near misses' or adverse events. Those limitations make it difficult to confidently link a positive safety culture to patient safety events (Groves, 2014). Brown and Wolosin (2013) were limited by the survey respondent size of nine hospitals ($N=9$). This was due to the requirement of each participant hospital concurrently having collected data on safety culture and nursing-sensitive metrics. What that means is the hospitals were required to have data on safety culture metrics as well as documented adverse events provided voluntarily by the nursing staff. Mardon et al. (2010) were able to control and evaluate their range of hospitals participating in the study based on the large amount of pre-existing available data that were obtained via the HSOPSC database.

Further support in relation to climate items and adverse events was demonstrated through the research of Agnew et al. (2013). The authors undertook a study of six NHS hospitals in Scotland ($N = 1866$) and evaluated the measure of patient safety climate on worker safety, patient and worker injuries using the HSOPSC (p.96). Keeping in mind that the response rate was only 23%, the results nonetheless identified the components management support, staffing, and teamwork across units, of a patient safety climate explained 13% of the variance of patient injuries ($Adj R^2 = .103, 0.121, 0.128$ respectively, $p < .05$) (p. 98). Safety participation behaviour of staff, the dimension of organizational learning, was strongest with 10% explained variance ($Adj R^2 = .097$) (p.98). From this study it can be concluded that influences of leadership and culture were identified within the variance of patient safety outcomes and safety practices were influenced by a supportive organizational learning context.

In a study conducted by Hanrahan et al. (2010) identified similar findings as Agnew et al. (2013), specifically identifying influences related to the actions and abilities of leadership in regard to a patient safety climate. In a study of 353 nurses working in psychiatric wards in 67 Pennsylvania hospitals, it was identified that better manager and leader skills were associated with fewer patient falls (adverse event) ($\beta = -.26, p < 0.5$) (p.573). Skills deemed to indicate better manager and leader skills included the ability to manage conflict, ensure safe and efficient patient care environments, and praising and recognizing nurses for a job well done.

Within the current review of literature, one article by Franco and Almeida (2011) was found to have structural dimensions similar to the current study. Franco and Almeida undertook an exploratory mixed-methods case study on one Portuguese healthcare organization. Data collection included a self-assessment survey measuring organizational performance of 29 collaborators divided between two units of the same organization, one in-depth interview with the Director of the organization to identify the leadership style and components of organizational learning, and document analysis for triangulation. The theoretical framework cited by Franco and Almeida (2011) was shaped by research related to learning organization theory (Senge, 1990) and situational leadership (Hersey & Blanchard, 2001). Analysis of triangulated data demonstrated that within this case study a “selling/persuading” (p.800) leadership style was present and that the least ‘marketed’ dimension of organizational learning in management policy was culture. In turn, the study confirmed that, broadly, there is a relationship of influence between leadership style and organizational learning. Top management who focused less on leading culturally were those who possessed lower levels of organizational performance in learning. In other words, it usually starts at the top-an organization’s learning is based on the learning capacity generated or provided by leadership (Franco & Almeida, 2011).

2.6 Summary

Relevant contemporary literature has been able to identify the relationship between leadership and/or patient safety culture, and outcomes. However, gaps in our understanding still remain in respect to how and why specific leadership characteristics impact both these areas of interest. To what extent do nursing staff, who directly report to front-line leadership who demonstrate authentic leadership attributes, work within a heightened patient safety culture? As well, do nursing staff who directly report to front-line leadership demonstrating authentic leadership attributes, experience less adverse events or near misses in relation to patient safety issues, and thereby work in a context of improving patient safety outcomes? Importantly, Squires et al. (2010) demonstrated the influence of leadership on the leader-follower relationships and this relationship on the safety climate yet were unable to demonstrate the significance using bi-variate analysis on a cultural environment. Gardner et al. (2011) called for “more extensive use of qualitative methods to provide thick narrative descriptions of leadership processes and contexts, including the dynamic interplay between authentic leadership, authentic followership, and ethical climates” (p.1141).

Sammer et al. (2010), performed a comprehensive review of safety culture literature within the USA hospital setting across the nations and concluded, “whereas strong leadership is often cited as critical to an organization’s culture of safety, there are no easy answers as to how leadership can develop or be developed to assure a culture of safety” (p.158). Stang et al. (2013) conducted a systematic literature review involving the prevalence, preventability, severity and types of adverse events in the Emergency Department. They concluded through identification of 11,624 citations that further research was needed to better understand specific risk factors for adverse events in an emergency department in hospitals and use of rigorous and standardized

outcome reporting with respect to adverse event causality, preventability, and severity (Stang et al., 2013, p.2). Ginsburg et al. (2010), identified that specific areas of patient outcomes were addressed in their surveys while others were left out, limiting the usefulness and impact of the results so far as generalization was concerned.

Patient safety culture is a complex phenomenon and acknowledged by researchers as difficult to measure (Groves, 2014; Singer et al., 2009). This may go some way to explain why numerous studies have been written on evaluating the climate rather than culture of patient safety in an organization. To date, these studies have limited themselves to surface-type perceptions of nursing staff in regard to the unit and organization they work in and lack the ability to understand the key dimensions and, in particular, values of the patient safety culture.

Many current sources have used bi-variate statistical procedures with self-reported adverse event reporting. Shortcomings within the current literature identified by Brown and Wolosin (2013); Groves (2014), and Mardon et al. (2010), include limited subjective data related to patient outcomes being evident. As well, there is a need for the potential addition of triangulated and more objective data to be employed in further studies. It is important to acknowledge that Groves (2014) noted there were no significant relationships in five small pilot meta-analyses of safety climate and specific patient outcomes. In explaining these somewhat surprising findings, Groves (2014) argued for the use of multiple measurement methods including quantitative and qualitative to truly understand organizational culture. Groves (2014) further recommended future studies examine the potential moderators of the relationship of patient safety culture and patient safety outcomes.

As acknowledged by Goh et al. (2013), Rosen et al. (2010), and Sammer et al. (2010), there is some consensus in the literature that top managerial support for patient safety, a non-

punitive work culture, and a focus on organizational learning could facilitate a patient safety culture and be pivotal to reducing adverse events. Nonetheless, a gap still remains on the ‘how and why’ this occurs. In that respect, exploring the ‘how’ and ‘why’ supports the call by Yule et al. (2008), to have further studies which address senior manager leadership and front line staff relationships and how they potentially impact patient care. This Ontario-based study offers an in-depth analysis and conceptualization of this impact and resultant effects.

2.7 Conceptual Framework

The conceptual framework for this current study was based on the unique and complex environment of a healthcare organization. The framework was built based on the commonality and integral relationship of authentic leadership theory and a learning organization theory. Both concepts are described below.

2.8 Authentic Leadership Theory

Authentic leadership theory, which was defined previously, was considered based on the model proposed by Gardner, Avolio, Luthans, May, and Walumbwa (2005) for the purpose of this study as “a self-based model of authentic leader and follower development” (Walumbwa et al., 2008, p.92). The theory was based on the belief that authentic leadership acts like a platform and is common to foundations in other leadership theories including transformational, charismatic, servant, and spiritual (Avolio & Gardner, 2005). Put another way, it has the fundamental aspects of leadership identified as the common core of many leadership theories. This common thread provides research based on authentic leadership practices the capacity to reveal fresh connections between theories (Cummings, 2009) and, as a result, create new knowledge and insights regarding the application of theory into practice.

2.8.1 Components of authentic leadership. Distinguishing features of the current authentic leadership theory include: it is rooted in extant social psychological theory and research on authenticity; it acknowledges a moral perspective as being the central role in the enactment of leadership; and the importance of further development of other authentic leaders and followers (Walumbwa et al., 2008). Leaders exhibiting the attributes of self-awareness and self-regulation in turn foster a follower's ability to develop authenticity and improved performance (Wong & Giallonardo, 2013; Ladkin & Taylor, 2010; Avolio & Gardner, 2005).

The components or attributes of the authentic leadership theory can be further categorized into self-awareness, transparency, ethic/moral, and balance processing. For example, leadership acknowledges their own strengths and weaknesses and demonstrates insight into their impact on others (self-awareness); promotes trust through openly sharing information and challenging others to do the same (transparency); engages in behaviours that are guided by internal moral standards and values (ethic/moral); and builds trusting environments that engage followers by encouraging sharing of information and accepting input from others prior to making a decision (balance processing) (Walumbwa et al. 2008; Wong & Giallonardo, 2013).

Identified limitations, delineations, and assumptions are acknowledged in respect to the use of the authentic leadership theory in this particular study. It was assumed within this research study that the participating leadership's true self was an ethical one. As recognized by Cummings (2009), the theory may not adequately address differences in leader-follower value congruence. Another area of potential weakness was identified within the realm of 'balance processing' that requires the leader to objectively evaluate information given to them prior to making a decision. It is acknowledged however, that the decision ultimately lies with formal leadership. This possible one-way leadership may limit collective leadership behaviour between

formal and informal leadership and potential empowerment (Cummings, 2009). As noted by Avolio and Gardner (2005), this formal decision making process is a key distinguishing factor of transformational leadership in which leadership has a primary focus on the development of their followers into leaders. Authentic leaders may have a positive impact on the actions of a follower but this does not necessitate having enabled opportunities for a shared vision or potential follower development into a leader. It is acknowledged however that some feminist authors, (for example Gardiner, 2015), have claimed authentic leadership does embody this type of leadership development and shared vision.

2.8.2 Relevance to nursing practice. The authentic leadership model has a potentially relational focus to nursing practice because it provides a logical framework for understanding how patient-care managers can engage in leadership practices that may facilitate higher levels of a nurse's trust in management and in turn influence work results (Cummings, 2009; Stander, de Beer, & Stander, 2015). Moral/ethical climates and leadership make a difference in a nurse's satisfaction with their work and influence the quality and safety of care that is provided to patients (Benner et al., 2008; Cummings, 2009; Laschinger & Fida, 2014). The American Association of Colleges of Nursing has continually underscored the influential place of health promotion and wellbeing in nursing practice. Authentic leadership theory supports these foci based on the need for a positive psychological capacity and culture being created within the unit.

2.9 Learning Organization

Senge (2006), describes a learning organization as a place where people are continually discovering how they create reality. The organization is focused on expanding its capacity for the future not merely surviving in it. Senge (2006) states that the characteristics of a learning organization, which include systems thinking, personal mastery, mental models, team learning

and shared vision, are relevant and present from the senior leaders to the managers and other constituents. In support of this premise, Crossan, Lane, and White (1999) describe organizational learning as a dynamic process, creating tension through feed-forward and feedback processes. Crossan et al. (1999) believe ideas flow from individuals to group and then to the organizational level while at the same time already learned actions flow back from the organizational level down to the individual. Understandably, a manager's role in creating and transferring knowledge within this type of learning organization requires the ability to motivate, problem solve, support and train (Alipour et al., 2011). A learning organization is an organization "skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights" (Garvin, 1993, p.4). Franco and Almeida (2011) lend further support to this task of leaders suggesting their role is to encourage knowledge sharing, support learning through tolerance of mistakes, create team learning and a shared vision, and empower people to enhance the commitment.

Learning organizations can be identified through policy, design, and application. For example, the National Health System (NHS) in Great Britain identified in official policy documents their goal to transform into a learning organization through a government 'quality' strategy by managing organizational culture in tandem with improved learning (Davies & Nutley, 2000). Practical application of these policy recommendations have, perhaps not surprisingly, proven harder to achieve in practice (Gray & Williams, 2011). Under-reporting of incidences was acknowledged by the media and led to the first published death rates of all hospitals in England in 2009. A new and heightened level of transparency for the general public, government, and hospital sectors was identified as one step towards hospitals becoming learning

organizations, yet areas of blame and surface learning have still been identified as areas in need of transformation (Davies & Nutley, 2000).

In the USA, Garvin, Edmondson, and Gino (2008), reported one example of a healthcare institution, the *Children's Hospitals and Clinics of Minnesota*, that created a supportive learning environment for hospital employees via their "blameless reporting" policy. The Chief Operating Officer instituted a policy of "blameless reporting" to change the culture of blame and silence about errors in the organization. This change of wording from leadership 'set the scene' and provided a safe environment for all staff who worked together to understand safety, identify risks, and feel comfortable to report the errors (Garvin et al., 2008). Over time it was identified that this action yielded measurable reductions in preventable deaths and illnesses in the institution.

In Canada, *St. Joseph's Healthcare Centre* in London, Ontario demonstrates many aspects of a learning organization through application of its vision and mission. The Chief Executive Officer and Chair, Board of Directors describe their vision best as, "it calls us to listen, to reach across and beyond our teams, program and organizational boundaries, to continuously improve, to build strong relationships - to be our best. It offers clarity about priorities and provides the space for annual review" (McLaughlin & Kernaghan, 2015, June 17). As described by Davies and Nutley (2000), "the key features of learning organizations relate less to the ways in which organizations are structured and more to the ways in which people within the organization think about the nature of, and the relationship between, the outside world, their organization, their colleagues, and themselves" (p.999).

A patient safety culture emphasizes a systems approach to dealing with errors. The overall assumption is that humans are fallible and errors will occur but the focus should be and

large be on what happened and not who did it (Goh et al., 2013). A learning organization provides this environment through supportive open dialogue, member empowerment, and lack of blame (Goh et al., 2013; Sammer et al., 2010). In brief, the literature suggests: 1) that managerial support for patient safety and organizational learning could facilitate a patient safety culture, 2) that a patient safety culture can have an impact on patient outcomes, and 3) that organizational learning can have a positive impact on patient safety culture (Goh et al., 2013). These integral relationships build on the intricacies of the framework provided and are the basis for this study's current area of inquiry.

Chapter 3

Methodology

An exploratory mixed-method case study design was utilized to develop a deeper understanding on how and why leadership attributes impact a patient safety culture and patient safety outcomes in a hospital (Organization X) that formally claimed to be a learning organization within their organizational documentation. For confidentiality purposes, the document created by Organization X is not listed in the references list. The overall guiding research question was: “how and why do leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization?” This case study sought to clarify the impact between specific leadership attributes and a patient safety culture, as well as the impact between specific leadership attributes and patient safety outcomes through addressing the following research sub-questions:

- 1) What is front-line leadership’s role in creating a patient safety culture and preventing adverse events and ‘near misses’ in a healthcare-based learning organization?
- 2) What is nursing’s role in creating a patient safety culture and preventing adverse events and ‘near misses’ in a healthcare-based learning organization?
- 3) Is there a significant relationship between specific leadership attributes and a patient safety culture?
- 4) Is there a significant relationship between specific leadership attributes and adverse events or ‘near misses’?
- 5) In what ways do semi-structured interviews and additional sources provide further corroboration of the statistical findings between authentic leadership attributes and patient safety culture and patient safety outcomes, via an integrative mixed-methods analysis?

With limited relevant evidence in the current literature, a single case study can help determine whether the propositions are correct or some alternative set of explanations may be more relevant (Yin, 2014). Data collection in this study relied upon both qualitative and quantitative evidence to ensure that it captured leader and ‘follower’ perceptions on leadership attributes, patient safety culture, and patient safety outcomes. Those multiple sources of information were analyzed and triangulation of the data pursued (See Table 1). This case study was intended to provide a useful contribution to the knowledge and theory of leadership attributes in a hospital setting and the leadership impact on culture and patient outcomes. As well, this study was designed to provide a framework for further studies in the area of interest. In these ways, the research responds favourably to Yin’s (2014) expectations for exploratory case studies.

Table 1
Methodology Outline

Sub-questions:	Measures	Methodology of Assessment
What is leadership’s role in creating a patient safety culture and preventing adverse events and ‘near misses’ in a healthcare-based learning organization?	<ul style="list-style-type: none"> • Semi-structured interviews with two nursing staff who completed the HSOPSC • Open-ended comments of HSOPSC 	<ul style="list-style-type: none"> • Modified constant comparative analysis
What is nursing’s role in creating a patient safety culture and preventing adverse events and ‘near misses’ in a healthcare-based learning organization?	<ul style="list-style-type: none"> • Semi-structured interviews with two nursing staff who completed the HSOPSC • Open-ended comments of HSOPSC 	<ul style="list-style-type: none"> • Modified constant comparative analysis
In what ways do semi-structured interviews and additional qualitative sources provide further corroboration of the statistical findings between authentic leadership attributes and patient safety culture and patient safety outcomes, via an integrative mixed-methods analysis?	<ul style="list-style-type: none"> • Semi-structured interviews • ALQ • AEMS reporting on patient safety issues for one year period • Organization document perusal • HSOPSC 	<ul style="list-style-type: none"> • Triangulation of data

Is there a significant relationship between specific leadership attributes and a patient safety culture?	<ul style="list-style-type: none"> • Surveyed nursing staff using the HSOPSC 	<ul style="list-style-type: none"> • Measure-to-measure and item-to-item inter-correlation matrices • Significance and post-hoc powers of inter-correlations
Is there a significant relationship between specific leadership attributes and adverse events or ‘near misses’?	<ul style="list-style-type: none"> • Surveyed nursing staff using the HSOPSC 	<ul style="list-style-type: none"> • Measure-to-measure and item-to-item inter-correlation matrices • Significance and post-hoc powers of inter-correlations

3.1 Epistemological Assumptions

3.1.1 Philosophical foundation. The method in this study was guided by assumptions related to a pragmatic worldview. Such a worldview especially focuses on the anticipated consequences of research, the research question more than the methods, and the use of pluralistic approaches to derive knowledge about the problem (Creswell, 2014; Creswell & Clark, 2011). A pragmatic worldview provides the flexibility for a mixed-methods study to evaluate a research problem with depth and inquiry through the use of multiple methods and analyses. Pragmatism posits how research approaches should be mixed in ways that offer the best opportunities for answering important research questions (Johnson & Onwuegbuzie, 2004). Qualitative and quantitative measures were utilized in this study to provide the context for triangulation, theoretical, and practical application. Johnson and Onwuegbuzie (2004) argue that pragmatism takes an explicitly value-oriented and ‘unapologetic’ approach to research and offers a practical and outcome-oriented method of inquiry that is based on action and leads to further action and whenever possible, elimination of doubt. This ‘middle ground’ stance provides the support for a mixed-method methodology and an effective manner in which to evaluate a complex hospital environment.

3.1.2 Theoretical lens. The analysis performed was grounded in the assumptions of an Interpretivist lens, defined as the method by which to understand phenomena through accessing the meaning in which participants assign them (Rowlands, 2005). It was assumed that knowledge of reality is only gained through social constructions where variables are not usually predefined and the focus remains on the individuals understanding and position as the situation emerges (Klein & Myer, 1999). In respect to the current study, this involves understanding the context in which leadership attributes are enacted and the process in which these attributes influence patient safety culture and outcomes. This form of ‘openness to the data’ and willingness to modify initial assumptions and theories results in an iterative process of data collection and analysis, with initial theories being expanded, revised, or abandoned altogether (Walsham, 1995). In this study, an Interpretivist lens required the researcher to attempt to understand, for example, each participant’s views rather than judge or evaluate their responses (Merriam, 1998). Such a contribution or orientation to the participants, and ultimately the data analysis, is focused on the potential for converging lines of inquiry (Yin, 2014). This understanding and line of inquiry will then be presented in a single converged datum that is relatable to multiple various data sources providing depth and breadth of knowledge in a small area of interest.

3.2 Research Design

3.2.1 Case study. A case study, as defined by Yin (2014), is an empirical inquiry “that investigates a contemporary phenomenon in depth and in its real-world context” (p.237). It provides a researcher with the ability to determine why and how an event is occurring in its natural environment via the use of a variety of research designs. A single case study has the potential to provide an understanding of a situation, experience or event to others within the

same contextual setting and interest. As well, “the insights provided by an individual case study can constitute a framework for developing enlightenment and guiding activity since they can ‘speak’ to others in similar and related contexts who share some of the same concerns” (O’Donoghue & Haynes, 1997, p.149). The design features of a case study include the capacity to both cope with a situation that has more variables of interest than data points and to triangulate the evidence for data collection and analysis (Yin, 2014). This exploratory case study was bounded by the individuals participating and the cross-sectional research design. The use of quantitative and qualitative data within this case study was based on the strong analytic strategy of Yin (2009), “to explore, describe, or explain events at this higher level” (p.133). The use of “how” and “why” dealt with operational links needing to be traced rather than relying on mere frequencies or incidence (Yin, 2014). As described earlier in Chapter 2, current gaps in literature demonstrated the need for this in depth analysis and understanding.

3.2.2 Correlational research. Correlational research, defined as a type of research that “involves collecting data to determine whether, and to what degree, a relationship exists between two or more quantifiable variables” (Gay et al., 2012, p. 203), was used to address the quantitative components of this research study. According to Gay et al., (2012), a minimally acceptable sample size for correlational studies is 30 participants. In this case study of 180 nurses, a correlational methodology involving a survey was utilized to test two hypotheses:

- 1) Nursing staff who report to front-line leadership demonstrating authentic leadership attributes work within a department that evidences a heightened patient safety culture.
- 2) Nursing staff who report to front-line leadership who demonstrate authentic leadership attributes experience less adverse events or near misses in relation to patient safety issues and thereby work in a context of improving patient safety outcomes.

Assumed by Creswell (2014), “examining the relationships between and amongst variables is central to answering questions and hypotheses through surveys” (p.155). Correlational research provides the context to understand the relationship between two or more variables within a study. The relationship measured, is presented as a correlation coefficient. It must be understood however, that this relationship does not establish a causal relationship between variables (Gay et al., 2012). Each correlation coefficient determined provides the researcher with a description of the relation between these two variables only. It is also important to note that the resulting correlation coefficient is only as good as the instruments used to reflect the variables of interest. The validity and reliability of each instrument must be considered for purposes of the study to be able to provide meaningful interpretations of the data (Creswell, 2014; Gay et al., 2012).

3.2.3 Mixed-methods study. A mixed-methods study allows a researcher to combine qualitative and quantitative approaches to understand a phenomenon comprehensively (Gay et al., 2012). As well, it provides the researcher with the ability to address more complicated research questions (however clearly those questions may be expressed) and collect a greater depth and expanse of data than by any single method alone (Yin, 2014). This study adhered to a convergent parallel design (Creswell & Clark, 2011), so quantitative and qualitative data were collected throughout the same study, and it was expected each part of the study would inform or complement the other. As described by Creswell and Clark (2011), this approach took into account concurrent timing of data collection, equal prioritization of data, and independent analysis of sources until the merging and interpretation of results.

As described by Gay et al. (2012), the main advantage of a mixed-method study is that each technique’s strengths outweigh the other’s weaknesses. Such a proposition was further supported by Schein (1990) who recommended the use of both qualitative and quantitative

approaches to study a culture's espoused and documented values and philosophies.

Instrumentation for the qualitative and quantitative portions of the current study included surveys, document perusal, and interviews. Limitations of a survey, including possible prejudged questions, were offset or balanced with the ability of the follower to self-analyze through open-ended research questions in an interview setting (Schein, 1990). A second instrumentation for the quantitative section of the project involved data collection of reported 'adverse events' and 'near misses' during an associated time period. Key benefits to using this technique included allowing outsider (researcher) questions to bring insider knowledge (adverse events) to the surface. A potential weakness within this technique is demonstrated by the need to use the process of inquiry through qualitative questioning to obtain a greater understanding of the proposed assumptions of the data (Schein, 1990).

3.3 Healthcare and Mixed-Methods Research

Mixed-methods case studies within the healthcare literature are increasing in number and dimension (Creswell, Fetters, & Ivankova, 2004). In respect to the current research topic of interest, two identifiable journal articles were noted for the particular relevance. Agnew and Flin (2013) performed two studies described within one sequential mixed-method design. The initial qualitative component of the study consisted of semi-structured interviews to obtain data on senior charge nurses' perceptions of their role as hospital ward leaders and associated behaviours. In combination with the results from the second study, these results supported the use of Yule's leadership taxonomy and *Managerial Practices Survey*. This is characteristic of an exploratory sequential mixed-methods design. Similarities to a convergent parallel design, like the one executed for this study, include the data sources used. Differences include the time allocation for data collection and method of interpretation.

As noted earlier, Franco and Almeida (2011) described their application of an exploratory mixed-methods case study on one Portuguese healthcare organization. Data collection and analysis resembled a convergent parallel design, and triangulation was sought at the point of analysis. Data collection included a self-assessment survey of 29 collaborators and one in-depth interview with the director of the organization. The purpose of the interview was to identify leadership style, and the survey was utilized for measurement of organizational performance. Contrasts to the current design include the limitation of one interview and no other objective data for comparison with the survey. According to Franco and Almeida (2011), their form of case study provided useful information on the implications of organizational learning, leadership style, and self-perceived organizational performance.

3.4 Limitations and Challenges

3.4.1 Construct Validity. Construct validity is defined by Yin (2014), as “the accuracy with which a case study’s measures reflect the concepts being studied” (p.238). The current research study demonstrates this accuracy within the defined authentic leadership attributes of the conceptual framework, use of evidence-based valid and reliable questionnaires (directly relating to attributes of leadership and safety culture), and objective data obtained through the *Adverse Event Management System (AEMS)* on patient safety. As well, the nature of the study relating to patient safety and the nursing role eloquently connected to the ethics of care, authenticity, and patient safety culture.

Current literature demonstrates a possible shortcoming in the use of authentic leadership in respect to whether the construct should contain the moral and ethical perspectives (Roof, 2014). The *Authentic Leadership Questionnaire (ALQ)* was designed to include the ethical dimension of leadership (Walumbwa et al., 2008). Roof (2014) examined eight studies

employing the ALQ second factor models for demonstrated adequate validity within the realm of ethics. Roof's (2014) examination of validity for the ALQ was based on the "theoretical face and content validity, convergent and discriminant validity characteristics, and nomological validity" (p.60). Roof (2014) concluded that results to date have been encouraging in respect to validity and early research has supported the generalizability of the ALQ across a variety of cultures and languages. Studies cited by Roof (2014) with confirmatory factor analysis validity measures and reasonable fit included Walumbwa et al. (2008) in study populations from across the globe: United States of America (USA) ($\chi^2 = 234.70$, CFI = .97, RMSEA = 0.5), China ($\chi^2 = 176.03$, CFI = .95, RMSEA = .06), and Kenya ($\chi^2 = 247.97$, CFI=.97, RMSEA= .06); Caza, Bagozzi, Woolley, Levy, and Caza (2010) in a New Zealand study ($\chi^2=1833.89$, CFI = .97, RMSEA = .065); Leroy (2012) in a Belgium study ($\chi^2 = 133.41$, CFI = .97, RMSEA = .08); Peus, Wesche, Streicher, Braun, and Frey (2012) in a German study ($\chi^2 = 251.15$, CFI = .94, RMSEA = .07); Qian, Lin, and Chen (2012) in a Chinese study ($\chi^2 = 191.29$, CFI = .94, RMSEA = .08); and Wang and Bird (2011) in a USA study ($\chi^2 = 705.20$, CFI = .98, RMSEA = .08) (p.62).

Validity issues associated with a convergent mixed-methods design include requirements for the inquirer as well as sampling techniques and sizes. As the researcher, one must recognize the need for extensive data collection, time, and knowledge required for both qualitative and quantitative inquiries (Creswell, 2014; Creswell & Clark, 2011). Researchers must also recognize the potential challenges with having different sampling sizes based on the data sets obtained. The intent for qualitative data is to locate and obtain information from a small (or smaller) sample for extensive information whereas the quantitative research requires a larger N for statistical significance (Creswell, 2014). In respect to the current study, the intent of each

element of the research, qualitative and quantitative, was different and yet would offer complementarity, and would provide information for interpretation and probable triangulation.

3.4.2 External Validity. External validity is defined by Yin (2014), as “the extent to which the findings from a case study can be analytically generalized to other situations that were not part of the original study” (p.238). Again, it was the intent of this research project to provide some insight on how and why leadership attributes impact patient safety culture and patient safety outcomes in a learning organization. The theoretical frameworks of authentic leadership and a learning organization provided the theoretical structure. In keeping with Yin’s (2014) argument, the study was then designed to provide a potential framework for further studies on the theoretical concepts presented or new concepts that arose within the case study.

3.4.3 Reliability. Reliability is defined by Yin (2014) as “the consistency and repeatability of the research procedures used in a case study” (p.240). In this current Ontario-based case study, measures taken to limit potential errors and biases in the study were manifold. Every attempt was made to make the study operational through detailed steps ultimately followed by the researcher. Validated surveys were used similarly to limit error in delivery and analysis of results. Contact with all participants was originated and maintained through email except for the semi-structured interviews. Modest incentives (gift cards) (approved by the Research Ethics Board, Western University) were given to support the participants and limit the prospect of anyone feeling there was any sense of coercion from leadership on the participants. The AEMS was a reporting system already in place within the organization measuring adverse events and ‘near misses’ across the organization. The case study population was specifically chosen based on the commonality of the emergency department to other hospitals within Ontario.

3.5 Participants

As indicated earlier, the learning organization chosen for this study is an acute care hospital located in Southwestern Ontario (Organization X). This field site was chosen based on a review of relevant research literature, location, and accessibility for the researcher. As well, due to the size and breadth of the scope this organization covers, it was believed to offer a good ‘indicative’ representation of an acute care hospital in Ontario. From initial document perusal, it was apparent that the organization of interest considered itself to be a learning organization with instilled values of trust, respect, and collaboration. The organizational culture was built on an environment of empowerment, collaboration, and accountability. As an institution accredited by *Accreditation Canada*, it is a requirement that every accredited organization have a ‘patient safety’ culture.

Of the approximately 14,000 employees in the hospital, the largest occupational group represented is nurses, with a population of approximately 3700. The nurses cover over 90 units within the hospital. The nursing population was chosen for this study based on their direct contact with patients and influence on patient safety culture and safety outcomes. The Adult Emergency Department located on one campus was further chosen as the group to be evaluated in this case study based on the commonality of this unit in relation to other acute care facilities across Ontario and the number of daily patient encounters. The average number of direct reports for Canadian nurse managers is 70 staff (Doran et al., 2004, p.11), which is similar to the population in the site being studied. At the time of fieldwork, approximately 175 patients were seen daily in the Adult Emergency Department alone. There is a potential for correlation of results to be of interest with other Ontario institutions due to these factors. At the current hospital, this unit consists of 180 nurses and 3 front-line leaders (2 coordinators and 1 manager).

3.6 Materials

3.6.1 Overview. Data collection consisted of quantitative and qualitative information obtained in a cross-sectional fashion. This means that all data were received from the participants in one specific and continuous period of time. As noted earlier, the mixed-methods style of study was anticipated to provide rigour to the case study. Favoured by Yin (2014), the adoption of various data sources is relevant and increases the validity and reliability of the case study. Addressing standards of validity and reliability are essential aspects of competent inquiry (Creswell, 2014). Data from participants were obtained through a survey of the nursing staff and front-line leadership and further substantiated by a select number ($N=2$) of semi-structured interviews with nurses. As articulated by Schein (1990), survey instruments alone are generally less useful because they presuppose the dimensions to be studied; however, more intensive observation through focused questions and involving participants in a form of self-analysis will help seek out the unconscious organizational or personally-held assumptions and perceptions. Further, Ginsburg, Tregunno, Norton, Mitchell, and Howley (2013) recommend the use of both quantitative and qualitative approaches to understand the breadth and depth of a patient safety culture. As noted earlier, additional data were obtained through document perusal (eg. personal communications, organizational strategy maps, policies) and the reported number of adverse events and near misses identified in the AEMS.

3.7 Quantitative Measures

3.7.1 Nursing survey. To identify perceived patient safety culture and unit leadership influence, all nurses within the selected emergency department were asked to voluntarily participate in the *Hospital Survey on Patient Safety Culture* (HSOPSC) developed by researchers at Westat under an Agency for Healthcare Research and Quality (AHRQ) contract (Sorra & Dyer, 2010). This survey includes 42 items that measure 12 dimensions of patient safety culture

and 2 outcome based questions. The dimensions included: teamwork within units, supervisor/manager expectations and actions promoting patient safety, organizational learning, management support for patient safety, overall perceptions of patient safety, feedback and communication about error, communication openness, frequency of events reported, teamwork across units, staffing, handoffs and transitions, non-punitive response to errors, patient safety grade, and number of events reported. The survey consisted of 5-point modified Likert scale questions (for example: strongly disagree; disagree; neither; agree; strongly agree), as well as an area for open-ended comments.

The psychometric properties of the HSOPSC are well documented in literature and it has been found to have acceptable psychometric properties (Blegen, Gearhart, O'Brien, Sehgal, & Alldredge, 2009; Brown & Wolosin, 2013; Sarac, Flin, Mearns, & Jackson, 2010). *Press Ganey Associates*, who adapted the instrument, also conducted their own psychometric analysis. Results demonstrated reliability of the survey (items and safety culture dimensions) through Cronbach's alpha ranging from 0.64 – 0.89 and strong internal consistency with an overall alpha of 0.95 (Brown & Wolosin, 2013, p.63). Reliability of the safety culture dimensions was identified by Sorra and Dyer (2010) with all dimensions .70 or greater except for the staffing dimension ($\alpha = .62$) (p.8). Sorra and Dyer (2010) performed psychometric analyses demonstrating both unit and hospital membership influence on how individuals respond to the survey. All items within the individualized dimensions had factor loadings above the .40 criterion providing initial support for the 12 dimensions and justification for aggregation to a single composite score for each dimension (p.6). Unit level interclass correlations were above the 5% criterion and design effects above the 2.00 criterion (p.7). Unit level multilevel confirmatory factor analysis between unit factor loadings ranged from .54 to 1.00 and the within-

unit factor loadings ranged from .36 to .93 (p.7). Unit level correlations among the 12 patient safety culture dimensions averaged .50 and .55 for these dimensions and the two outcome items (p.8). These findings support the conclusion that the survey measures group culture not just individual attitudes (Sorra & Dyer, 2010).

Consideration and analysis of other potential cultural surveys included comparison of the HSOPCS with the *Canadian Patient Safety Climate Survey* (Can-SPCS). The revised Can-PSCS was adopted by Accreditation Canada (Ginsburg et al., 2013). The initial delineation between Can-PSCS and HSOPCS is based on ‘climate’ versus ‘culture’. As described by Ginsburg et al. (2013), climate is based on what happens to people in an organization, whereas culture resides at a deeper level and helps define why things happen in an organization. In terms of the current research question, culture is a necessary area of investigation rather than climate. Secondly, the Can-PSCS can only be distributed to individuals who have direct interaction or contact with patients. The HSOPSC can be distributed to all employees and does not delineate patient interaction. Although this was not a limitation in the current study, this could be a possible limitation to be considered when designing any such future longitudinal or multiple case study research that includes such employees.

3.7.2 Leadership survey. To identify the perceived leadership attributes, all 3 unit leaders were asked to participate in the ‘self’ *Authentic Leadership Questionnaire* (ALQ) developed by Walumbwa et al. (2008). Approval for use was received by *Mind Garden Inc.* prior to distribution (see Appendix A). The ALQ consisted of 16 items and used a 5 point modified Likert scale (not at all; once in a while; sometimes; fairly often; frequently if not always) to reflect on the four subscales of authentic leadership: self-awareness, transparency, ethical/moral, and balance processing (Roof, 2014; Walumbwa et al., 2008). It is a theory-laden

survey derived to evaluate the components of authentic leadership in an individual (Walumbwa et al., 2008). It is a reliable and valid instrument with prior Cronbach's alpha values in 11 studies greater than 0.70 (Roof, 2014, p.60). Studies specifically cited by Roof included the works of Darvish and Rezaei (2011), Nielsen, Eid, Mearns, and Larsson (2013), Peus et al., (2012), Qian, Lin, and Chen (2012), Wang and Bird (2011), Walumbwa et al. (2008), plus Wong and Laschinger (2013). Of those studies, all used the internal consistency approach to evaluate the second-tier authentic leadership construct and subscales for authentic leadership. Hsiung (2012) and Leroy, Palanski, and Simons (2012) reported an overall second order measure greater than .70 (.96 and .95 respectively). Reliability, defined as the consistency of the measurement and ability to measure with minimum error, is demonstrated through the Cronbach's alpha (Roof, 2014).

Validity, defined as the instrument's ability to measure the characteristics intended, and described earlier in this chapter in respect to the ALQ, was also demonstrated through confirmative factor analysis (CFA) by Walumbwa et al. (2008) using two independent samples from the USA and People's Republic of China. The fit of three different factor structures was performed: one factor model (all 16 items were indicative of a larger authentic leadership factor); first-order factor model (items were allowed to load onto their respective factors and to correlate with each other); and second-order factor model (items were loaded onto their respective factors and the four factors loading on a second-order latent authentic leadership factor) (Walumbwa et al.). Both demonstrated that the best-fitting model was the second-order factor model (USA sample: $\chi^2 = 234.70$, CFI = .97, RMSEA = .05; Chinese sample: $\chi^2 = 176.03$, CFI = .95, RMSEA = .06) and the worse-fitting was the one-factor model (U.S. sample: $\chi^2 = 356.78$, CFI = .91, RMSEA = .11; Chinese sample: $\chi^2 = 249.79$, CFI = .91, RMSEA = .09) (Walumbwa et al., p.99).

The standardized factor loadings for the second-order factor authentic leadership model in the USA and Chinese model ranged from .66 to .93 (Walumbwa et al., p.98).

Interestingly, it was found by Walumbwa et al. (2008) in two independent samples from a large southwestern U.S. university, discriminant validity of the ALQ with positive relationships between the four underlying dimensions of authentic leadership and ethical and transformational leadership. In the same studies however, Walumbwa et al. (2008) identified a defined difference between the authentic leadership construct and the ethical and transformational leadership styles. The ALQ has consistently demonstrated positive relationships between authentic leadership and organizational citizenship behaviour, organizational and team commitment, satisfaction with supervisor, behavioral integrity, job performance, employee voice behaviour, job satisfaction, perceived team effectiveness, trust, engagement, empowerment, feedback seeking behaviour, and safety climate (Darvish & Rezaei, 2011; Leroy et al., 2012; Nielsen et al., 2013; Peus et al., 2012; Roof, 2014; Walumbwa et al.; Wang & Bird, 2011; Wong & Laschinger, 2012).

3.7.3 Adverse event reporting system. All employees in the organization had access to the *Adverse Event Management System* (AEMS). This system provides a formal process for identifying, documenting, and investigating any unexpected or undesirable event (adverse event) or 'near miss' in the hospital. An 'adverse event' is defined in this research study as an unintended, unexpected, and undesirable negative outcome resulting from health care management (Hospital Intranet, personal communication, 2015). A 'near miss' is defined as an event or situation that could have resulted in harm but did not, either by chance or timely intervention (Hospital Intranet, personal communication, 2015). In regard to patient safety, AEMS is provided as a tool to assist the organization in promoting a culture of safety by understanding where the gaps and risks are in the system and processes. The information

gathered in AEMS is used to improve the quality and safety within the hospital without resulting in punitive treatment to the staff (personal communication, May 25, 2015).

Within this hospital system, the AEMS is used to report adverse events and near misses for staff, patients, visitors, property, and affiliates, as well as patient and family complaints and compliments. Each event logged in the system can be entered as a near miss, level 1 (no injury/harm – assessment required), level 2 (no injury/harm – intervention/monitoring required), level 3 (minor to moderate injury/harm), level 4 (serious injury/harm/disability), or level 5 (death). Each event is immediately sent to the ‘direct report’ of the employee who wrote the report and may escalate to senior management review, expert review, or risk management/Occupational Health Systems review based on the situation.

Tallies were obtained from the unit based on type and frequency of patient safety event within the Emergency Department within a one year time period. Front-line leadership received all AEMS reports for their unit each month. A patient safety event for this study was defined as an event or situation that either did or could have impacted a patient negatively (Hospital Intranet, personal communication, 2015). This included adverse events as well as near misses. All other reported information from the department within the AEMS was not provided to the researcher.

3.8 Qualitative Measures

3.8.1 Semi-structured Interviews. Nursing staff were offered the opportunity to participate further in the study (following their completion of the HSOPSC) through a semi-structured interview. This one-to-one interview focused on the nurse’s personal considerations of the current patient safety culture within the Emergency Department and front-line leadership’s influence. Nurses were advised the interview was to provide the researcher with the opportunity

to further understand the viewpoint and experiences of nursing staff in the Emergency Department in relation to culture and current leadership practices. Each nurse was provided definitions on a patient safety culture and learning organization for clarity. Interview questions included asking each nurse to describe three attributes of current unit leadership, their use of AEMS reporting, and leadership influences on patient safety and their nursing practice.

Validity of the qualitative component of research was established through researcher actions and recommendations set by Yin (2009) and Creswell (2014). Actions taken by the researcher included: creating a diagram of the methodology and specific steps of the case study for others to follow, using rich descriptions of the setting and themes for results to be more realistic and richer, and use of peer debriefing to enhance the accuracy of the account.

Influences on the researcher's role and theoretical sensitivity, referred to "as an attribute of having insight, the ability to give meaning to data, the capacity to understand, and capability to separate the pertinent from that which isn't" (Strauss & Corbin, 1990, p.42), were also identified prior to and throughout the course of the research methodology. Influences based on the researcher's professional experience in healthcare, previous personal experiences as a patient in the Emergency Department, interactions with staff within a professional setting and outside of the contexts of the research, and working knowledge through literature reading were identified. To ensure accuracy of data throughout the data collection and analysis process, the researcher practiced self-reflection and participated in regular advisory meetings with colleagues and advisory staff.

3.9 Procedures

3.9.1 Ethical procedures. The current research study was approved by Western University Ethics Review Board prior to commencement (see Appendix C). As well, it was

approved by the participating hospital's Risk Management and Clinical Research Impact Committee. The study underwent a delegated review due to the fact the study was deemed to not pose any increased probability or magnitude of possible harm to the participants greater than what they would encounter in their daily work life.

3.9.2 Participant population. Due to the small number of nurses within the Emergency Department (compared to the entire institution), the reporting structure, and the daily interaction of the nursing staff with both their coordinators and manager, all nursing staff ($N=180$) and coordinator and manager positions ($N=3$) were invited to participate in the study. Inclusion criteria included that each participant must be a registered nurse and/or in a coordinator/manager role, be currently employed at the healthcare organization, and their primary point of employment be in the Adult Emergency Department at the designated campus of the healthcare organization. It was anticipated that the age range of participants would be between 25-50 years old, with a greater percentage of females than males. Nonetheless, age, length of employment, age and gender were not part of the inclusion or exclusion criteria.

3.9.3 Contact. All participants were initially contacted by the hospital administration through their employee email address (see Appendix D). Participants were advised of a potential research opportunity and provided the contact information of the researcher if interested. Nursing and leadership staff who indicated an interest in the study were then provided a second email related to their role. The nurse's email reiterated the intent of the research study and the two potential opportunities for participation. Attachments included the Letter of Information (see Appendix E) and URL link and password to the HOSPSC survey. The leadership's email reiterated the intent of the research study and the potential opportunity for participation. Attachments included the Letter of Information and URL link and password to the ALQ survey.

Cognizant of the participant population and their employment demands, as well as the literature on response rates to surveys (Squires et al., 2010; Wong & Giallonardo, 2013), each participant was also given a \$5 electronic gift card as a token of appreciation for their time. Consent to participate in the survey portion was implied through the action of taking the survey. Each participant was advised that this was entirely voluntary and the information they provided would remain anonymous.

A follow up email was sent to all participants three weeks following the initial distribution as a reminder for a potential opportunity to participate in the research study and to thank others who had already participated. A final email reminder was sent out three weeks later.

Nursing staff who initially contacted the researcher with an interest in participating in the study were offered two potential areas of participation. All interested nursing staff were provided the URL link to the HSOPSC to complete. Following completion of the HSOPSC, eligible respondents were given the opportunity to participate in a secondary non-identifiable interview process. Two respondents agreed to participate in the interview process. Participants in the interview were given the Letter of Information, as well as a consent form to read and sign prior to commencement of the interview. The semi-structured one-to-one interview was typically approximately 60 minutes in length and, with the participant's agreement, audio recorded. Each participant was provided a \$10 gift card as a small token of appreciation for their time. Participants were reminded of their right to remove themselves from the research at any time without penalty. All data were transcribed verbatim. Both participants were offered the opportunity to review and edit their transcribed works prior to analysis.

3.9.4 Adverse event reporting. The type of incident and frequency of occurrence documented in the AEMS from October 2014 for a one year period was obtained from the hospital's administration. All incidents were related to patient safety issues from the Adult Emergency Department on the designated Campus.

3.10 Data Analysis

3.10.1 Quantitative. HSOPSC results were obtained for analysis as raw data from the online survey system *Survey Monkey*. A correlational design was implemented in which correlational statistics were used to describe and measure the relationship between two variables (Creswell, 2014). Use of quantitative measurements served to seek out relevant true statements that could explain the fundamental relationships of interest (Creswell, 2014). Specifics of interest included: is there a significant relationship between specific leadership attributes and a patient safety culture and is there a significant relationship between specific leadership attributes and adverse event reporting? Data analysis of the HSOPSC was performed through polychoric and polyserial inter-correlations, established by variable types, using *Mplus 6.0*. Based on the safety culture dimensions and individual questions intended measurements, variables were created and included: two unit specific safety culture measures, four leadership attribute measures, and two patient safety outcome measures. Modified maximum likelihood was used for missing data. This model based method required *Mplus 6.0* to check the entire data matrix to generate the most likely missing value versus mean replacement that inputs the mean rather than the most probable response.

Two safety culture measures were chosen for analysis: Culttot (including the dimensions of: teamwork within units; organizational learning- continuous improvement; overall perceptions of patient safety; feedback and communication about error; communication openness; teamwork

across units; staffing; handoffs and transitions; and non-punitive response to errors), a continuous variable, and CultMeaE (patient safety grade dimension), an ordinal variable. Section F question 1, 8, and 9 (management support for patient safety dimension) were excluded due to the nature of questioning in relation to hospital management instead of unit influences. Four leadership attributes were individually analyzed (LeadB1-B4) as ordinal variables. Patient outcomes were identified as two measures for analysis: Outnumto (number of events reported) and Outreptot (Frequency of events reported), both ordinal in nature. Descriptive statistics including mean (*M*) and standard deviation (*SD*) were calculated for each item.

Inter-correlational matrices were performed for all measure-to-measure and item-to-item correlations to address the proposed hypotheses that nursing staff who report to front-line leadership demonstrating authentic leadership attributes work within a heightened patient safety culture and that nursing staff who report to front-line leadership demonstrating authentic leadership attributes, experience less adverse events or near misses in relation to patient safety issues and thereby work in a context of improving patient safety outcomes. A *p*-value was calculated for each correlation with a significance level of $<.05$. As described by Gay et al. (2012), the decision for the level of significance is based on both the risk and practical significance of the findings. *P-values* < 0.5 are typically chosen as a standard practice when there is acceptable balance between Type I and Type II errors. A type I error is defined as, “the rejection by the researcher of a null hypothesis that is actually true” (Gay et al., 2012, p.633). A type II error is defined as, “the failure of a researcher to reject a null hypothesis that is really false” (Gay et al., 2012, p.633). Based on the specific research topic, greater risk of chance was accepted for a reasonable balance between errors. A posthoc power estimate was calculated for each correlation with a type 1 error rate of .05. Power relates to the sensitivity of the study

results to be able to detect a significant effect when one actually exists. Power values equal to or greater than .80 were considered significant.

ATQ results were obtained as individual item numbers from the online survey system *Survey Monkey*. The raw score of each scale (transparency, moral/ethical, balanced processing, self-awareness) was calculated through the mean of the individual items associated with each scale.

Data obtained from the AEMS were tallied based on the level of occurrence and categories of incident. Descriptive statistics including *M* and *SD* were calculated for each tally.

3.10.2 Qualitative. Data analysis of the transcribed interviews and open-ended comments on the HSOPSC was performed using a modified version of constant comparative method. This process is described by Glaser and Strauss (1967) as emanating from the method of constant comparative data analysis in grounded theory. Theoretically, research performed through constant comparative analysis requires a continuum of data collection, analysis, and continual modification (Strauss & Corbin, 1990). A modified version was performed based on a research protocol being initiated, data collection initiated based on this protocol, and data analysis commencing following completion of the data collection process. Constant comparative analysis relates to the constant interaction of data, analysis, and theory resulting in the development of theory from the data being examined (Strauss & Corbin, 1990; Glaser & Strauss, 1967).

Based on the structure described by Strauss and Corbin (1990), the initial phase of data analysis was performed through 'open coding'. This first level of coding gave units of information a level of meaning. These units could be individual words, a single line, or several sentences that were then coded into concepts. The second step in this initial phase of coding

required the concepts identified to be organized into categories. Further analysis through 'axial coding' was then performed by identifying properties and dimensions of the established categories, creating key categories. Throughout these initial two coding techniques constant comparative analysis was performed. The final stage of 'selective coding' was not performed until the researcher was satisfied that no new information appeared about the categories and their dimensions and saturation of data was achieved. The 'core theory' was identified in the final stage of coding with integration of this theory with all other categories.

3.10.3 Triangulation. Data collected from the HSOPSC, ATQ, AEMS tallies, semi-structured interviews, and document perusal were further analyzed using data triangulation methods. The rationale for seeking triangulation in case studies is to increase the sturdiness of the study's claims and it usually being a superior approach than those relying solely on single source information (Yin, 2014). This specific measurement strategy is significant for the current study due to the nature of its design and purpose. It is important for triangulation to be achieved, as the case study findings usually must be supported by at least three sources. Specifically, this form of evaluation takes a wide scope of information within a case study format, analyzes the findings for commonalities and arrives at a conclusion that is convincing and accurate (Yin, 2014). Triangulation of different data sources is also a significant factor in validity of results within a mixed methods study. Specifically, diverse data are used to build a coherent justification of themes and core theory developed in the qualitative analysis further providing validity and trustworthiness of the data (Creswell, 2014; Gay et al., 2012). Triangulation therefore seeks to mutually corroborate and converge data obtained from quantitative and qualitative measures for greater validity of the research study's conclusions (Creswell & Clark, 2011).

3.11 Summary

The methodology described identifies all aspects of inquiry in relation to progressing the research question of how and why do leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization. Quantitative and qualitative information obtained through the HSOPSC, ATQ, AEMS, semi-structured interviews, and document perusal provided the content basis for triangulation. In terms of other design considerations and foci, a safety culture has the ability to reduce medical errors and influence organizational learning (Goh et al., 2013). Authentic leadership has the ability to foster the development of authentic attributes in followers and, in turn, followers' authenticity has the ability to contribute to sustainable and veritable performance (Avolio & Gardner, 2005). Taken as a whole, the methodology employed in this study, provided the opportunity to merge these individual concepts into a complex understanding of leadership, patient safety culture, and patient safety outcomes.

Chapter 4

Results

This chapter presents the results from the quantitative and qualitative data obtained in this study. The order in which it is presented does not represent the sequence in which it was obtained. Rather, the layout used is based on readability purposes for the audience.

4.1 Quantitative Results

4.1.1 The Hospital Survey on Patient Safety Culture. The *Hospital Survey on Patient Safety Culture* (HSOPSC) was accessible to 180 nurses working within the Adult Emergency Department from September 15th, 2015 to November 6th, 2015. The response rate at the end of this collection period was 26.1% ($N = 47$). A frequency analysis was performed to identify the percentage of missing data within the obtained sample. The results of this calculation demonstrated an ideal state with <5% of the data missing. The missing values occurred at random based on inspection. In respect to items and measures used from the HSOPSC, short forms were created for ease of data input (Table 2-4).

Table 2
Definition of Terms

Variable Measure Name	HSOPSC Item	HSOPSC Dimensions and Outcome Questions
LeadB1	My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.	Supervisor/Manager Expectations and Actions Promoting Patient Safety
LeadB2	My supervisor/manager seriously considers staff suggestions for improving patient safety.	Supervisor/Manager Expectations and Actions Promoting Patient Safety
LeadB3	Whenever pressure builds up my supervisor/manager wants us to work faster, even if it means taking shortcuts.	Supervisor/Manager Expectations and Actions Promoting Patient Safety
LeadB4	My supervisor/manager overlooks patient safety problems that happen over and over.	Supervisor/Manager Expectations and Actions Promoting Patient Safety

CultMeaE	Please give your work area/unit in this hospital an overall grade on patient safety.	Patient Safety Grade
Outnumto	In the past twelve months how many reports have you filled out and submitted.	Number of Events Reported
Outreptot	The sum of variables represented in Table 2.	Frequency of Events Reported
Culttot	The sum of the variables represented in Table 3.	Teamwork Within Units Organizational Learning - Continuous Improvement Overall Perceptions of Patient Safety Feedback and Communication About Error Communication Openness Teamwork across Units Staffing Handoffs and Transitions Non-punitive Response to Errors

Table 3
Defined Items of Outreptot

Variable Item Name	HSOPSC Section D
OutrepD1	When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?
OutrepD2	When a mistake is made, but has no potential to harm the patient, how often is this reported?
OutrepD3	When a mistake is made that could harm the patient, but does not, how often is this reported?

Table 4
Defined Items of Culttot

Variable Item Name	HSOPSC Item
Section A: Your Work Area/Unit	
CultA1	People support one another in this unit.
CultA2	We have enough staff to handle the workload.
CultA3	When a lot of work needs to be done quickly, we work together as a team to get the work done.
CultA4	In this unit, people treat each other with respect.
CultA5	Staff in this unit work longer hours than is best for patient care.
CultA6	We are actively doing things to improve patient safety.

CultA7	We use more agency/temporary staff than is best for patient care.
CultA8	Staff feel like their mistakes are held against them.
CultA9	Mistakes have led to positive changes here.
CultA10	It is just by chance that more serious mistakes don't happen around here.
CultA11	When one are in this unit gets really busy, others help out.
CultA12	When an event is reported, it feels like the person is being written up, not the problem.
CultA13	After we make changes to improve patient safety, we evaluate their effectiveness.
CultA14	We work in "crisis mode" trying to do too much, too quickly.
CultA15	Patient safety is never sacrificed to get more work done.
CultA16	Staff worry that mistakes they make are kept in their personnel file.
CultA17	We have patient safety problems in this unit.
CultA18	Our procedures and systems are good at preventing errors from happening.
Section C: Communications	
CultC1	We are given feedback about changes put into place based on event reports.
CultC2	Staff will freely speak up if they see something that may negatively affect patient care.
CultC3	We are informed about errors that happen in this unit.
CultC4	Staff feel free to question the decisions or actions of those with more authority.
CultC5	In this unit, we discuss ways to prevent errors from happening again.
CultC6	Staff are afraid to ask questions when something does not seem right.
Section F: Your Hospital	
CultF2	Hospital units do not coordinate well with each other.
CultF3	Things "fall between the cracks" when transferring patients from one unit to another.
CultF4	There is good cooperation among hospital units that need to work together.
CultF5	Important patient care information is often lost during shift changes.
CultF6	It is often unpleasant to work with staff from other hospital units.

CultF7	Problems often occur in the exchange of information across hospital units.
CultF10	Hospital units work well together to provide the best care for patients.
CultF11	Shift changes are problematic for patients in this hospital.

It was hypothesized that nursing staff who report to front-line leadership who demonstrate authentic leadership attributes, work within a department that evidences a heightened patient safety culture. It was also hypothesized that nursing staff who report to front-line leadership who demonstrate authentic leadership attributes, experience less adverse events or near misses in relation to patient safety issues and thereby work in a context of improving patient safety outcomes. In attempt to support these hypotheses, inter-correlations were performed using *Mplus 6.0* based on data obtained from the HSOPSC. Descriptive statistics were performed for each individual item and measure (Table 5).

Table 5
Means and Standard Deviations for HSOPSC Survey Items and Measures

	<i>M</i>	<i>SD</i>
Culttot Items		
CultA1	4.04	0.94
CultA2	2.23	1.05
CultA3	4.19	0.77
CultA4	3.72	0.74
CultA5	2.96	1.12
CultA6	2.83	1.01
CultA7	3.76	0.92
CultA8	2.93	1.04
CultA9	3	0.77
CultA10	2.52	1.11
CultA11	3.32	1.05
CultA12	2.89	0.99
CultA13	2.93	0.90
CultA14	2.17	1.02
CultA15	2.3	0.99
CultA16	2.51	0.98
CultA17	2.2	0.93

CultA18	2.81	1.01
CultC1	2.85	0.88
CultC2	3.47	0.83
CultC3	2.54	0.81
CultC4	2.94	0.97
CultC5	2.85	0.89
CultC6	3.49	0.80
CultF2	2.09	0.89
CultF3	2.6	1.01
CultF4	2.5	0.94
CultF5	3.16	1
CultF6	2.93	0.88
CultF7	2.76	0.87
CultF10	2.91	0.94
CultF11	3.24	1
Outreptot Items		
OutrepD1	2.6	0.88
OutrepD2	2.91	0.97
OutrepD3	3.51	1.06
Leadership Measures		
LeadB1	3.3	1.04
LeadB2	2.85	1.02
LeadB3	3.06	0.99
LeadB4	3.23	0.96
Culture Measures		
CultMeaE	3.02	0.68
Culttot	92.15	16.11
Outcome Measures		
Outreptot	9.02	2.42
Outnumto	2.26	0.88

Polychoric inter-correlations were performed for all item to item and measure to measure correlations (ordinal variables) except with Culttot (functionally continuous variable). A polyserial inter-correlation was performed for all ordinal variables with Culttot. Inter-correlation matrices were performed for all item to item and measure to measure correlations (Table 6,7, see Table 8-10 in Appendix F). p -values $< .05$ were considered significant and posthoc power estimates equal to or greater than 0.8.

Table 6

Correlations, Significance, and Post-hoc Power of Patient Safety Outcome Items

	<i>r</i>	<i>P</i>	<i>Power</i>
OutrepD1 with OutrepD2	0.67	<.001	1
OutrepD1 with OutrepD3	0.45	<.001	1
OutrepD2 with OutrepD3	0.69	<.001	1

Table 7

Correlations, Significance, and Post-hoc Power of HSOPSC Measures

	<i>R</i>	<i>P</i>	<i>Power</i>
LeadB1 with LeadB2	0.82	<.001	1
LeadB1 with LeadB3	0.28	0.096	1
LeadB1 with LeadB4	0.30	0.074	1
LeadB1 with CultMeaE	0.43	<.05	1
LeadB1 with Outnumto	-0.28	<.05	1
LeadB1 with Culttot	0.46	<.01	1
LeadB1 with Outreptot	0.12	0.519	0.72
LeadB2 with LeadB3	0.51	<.001	1
LeadB2 with LeadB4	0.48	<.01	1
LeadB2 with CultMeaE	0.71	<.001	1
LeadB2 with Outnumto	-0.34	<.05	1
LeadB2 with Culttot	0.54	<.001	1
LeadB2 with Outreptot	0.07	0.652	0.46
LeadB3 with LeadB4	0.75	<.001	1
LeadB3 with CultMeaE	0.67	<.001	1
LeadB3 with Outnumto	-0.03	0.808	0.24
LeadB3 with Culttot	0.65	<.001	1
LeadB3 with Outreptot	0.57	<.001	1
LeadB4 with CultMeaE	0.56	<.001	1
LeadB4 with Outnumto	-0.06	0.685	0.38
LeadB4 with Culttot	0.51	<.001	1
LeadB4 with Outreptot	0.29	<.05	0.99

CultMeaE with Outnumto	-0.23	0.07	0.96
CultMeaE with Culttot	0.69	<.001	1
CultMeaE with Outrepto	0.10	0.537	0.63
Outnumto with Culttot	-0.23	0.06	0.96
Outnumto with Outrepto	0.16	0.378	0.83
Culttot with Outrepto	0.33	<.05	1

Table 8, 9, and 10 are located in Appendix F. The content of this Appendix is as follows; Table 8 details Correlations of Patient Safety Culture Items, Table 9 details Patient Safety Culture Items *p* Values, and Table 10 details Patient Safety Culture Items Post-hoc Power Value.

Significant item-item correlations for all measurements were considered within the acceptable range for correlation values for validity of the measurement sum except for one outlier. It was identified that CultA3 (4.19, 0.77) had a strong positive correlation with CultA4 (3.72, 0.74) ($r = .97, p < .001, power = 1$). The Culttot measurement was identified to suffer from collinearity with CultA3 being redundant with CultA4 and therefore CultA3 may have been used unnecessarily to obtain the same results.

In respect to leadership attributes impact on patient safety culture, a moderate positive correlation was observed between LeadB1 (3.3, 1.04) and CultMeaE (3.02, 0.68), $r(45) = .43, p < .001$, and LeadB1 (3.3, 1.04) and Culttot (92.15, 16.11), $r(45) = .46, p < .001$. LeadB2 (2.85, 1.02) had a strong positive correlation with CultMeaE (3.02, 0.68) and Culttot (92.15, 16.11), $r(45) = .71, p < .001$ and $r(45) = .54, p < .001$ respectively. LeadB3 (3.06, 0.99) demonstrated a strong positive correlation with CultMeaE (3.02, 0.68) and Culttot (92.15, 16.11), $r(45) = .67, p < .001$ and $r(45) = .65, p < .001$ respectively. LeadB4 (3.23, 0.96) demonstrated a strong positive correlation with CultMeaE (3.02, 0.68) and Culttot (92.15, 16.11), $r(45) = .56, p < .001$ and $r(45) = .51, p < .001$ respectively.

In respect to leadership attributes impact on patient safety outcomes, a weak negative correlation was observed between LeadB1(3.3, 1.04) and Outnumto (2.26, 0.88), $r(45)=-.28$, $p<.05$. LeadB2 (2.85, 1.02) showed a moderate negative correlation with Outnumto (2.26, 0.88), $r(45)=-.34$, $p<.05$. LeadB3 (3.06, 0.99) demonstrated a strong positive correlation with Outreptot (9.02, 2.42), $r(45)=.57$, $p<.001$. LeadB4 (3.23, 0.96) demonstrated a weak positive correlation with Outreptot (9.02, 2.42), $r(45)=.29$, $p<.05$.

4.1.2 Authentic leadership questionnaire. The *Authentic Leadership Questionnaire* (ALQ) was accessible to the three unit leaders from September 15th, 2015 to November 6th, 2015. Response rate was 33.3% ($N=1$). The ALQ was used to obtain a deeper understanding of the leaders' perceived view of their leadership style and potential self-identified gaps within the characteristics of authentic practice. The ALQ consisted of 16 questions divided into four scales based on the components of the authentic leadership theory. Example questions are provided in Table 11. The single participant's raw scores were calculated as the mean of the individual items designated for each scale (Table 12). Based on the low response rate, the ALQ scores were evaluated during triangulation through a qualitative means.

Table 11
Authentic Leadership Questionnaire Examples

As a leader I.....	Not at all	Once in awhile	Sometimes	Fairly Often	Frequently, if not always
Display emotions exactly in line with feelings.	0	1	2	3	4
Make decisions based on my core values.	0	1	2	3	4
Solicit views that challenge my deeply held positions.	0	1	2	3	4

Table 12

Authentic Leadership Questionnaire Raw Scores

Scale	Raw Score
Transparency	3.2
Moral/Ethical	3
Balanced Processing	3.3
Self-Awareness	4

4.1.3 Adverse event management system. Data in regard to the *Adverse Event Management System (AEMS)* reporting were obtained from hospital administration for the period of one year starting from October 2014. Only data related to patient safety were obtained. A total of 486 incidents were documented in the AEMS relating to patient safety adverse events or near misses within the one year time frame in the Emergency Department. The total number of each level of incident is presented in Table 13. Thirteen subcategories were identified and presented in Table 14 along with descriptive statistics.

Table 13

AEMS Tallies of Level of Incidences

	Total
Level 1	166
Level 2	229
Level 3	32
Level 4	3
Level 5	1
Not Specified	55
Management Review	18

Table 14

AEMS Subcategories Tallies, Means, and Standard Deviations

	Tally	<i>M</i>	<i>SD</i>
Laboratory/Test Related		35.83	56.45
Specimen not processed/test not complete	146		
Results - Incorrect Results Reported	7		
Results - Reported on Incorrect Patient	12		
Specimen Integrity/Reliability of Results	46		
Results - Delay in Reporting	3		
Other	1		

<u>Treatment and Procedure Related</u>		4.75	12.05
Other	43		
Operative	1		
Respiratory Therapy Related :: Delay/Omission/Interruption in Therapy :: Ventilation	1		
Line/Tube Related :: Other	1		
Respiratory Therapy Related :: Delay/Omission/Interruption in Therapy :: Non- invasive Ventilation	2		
Labour & Birth :: Injury to Mother	2		
Respiratory Therapy Related :: Patient Transport Without Accompaniment :: Unstable Patient	1		
Respiratory Therapy Related :: Inappropriate/Inadequate Monitoring :: Pulse Oximetry	1		
Line/Tube Related :: No Line Started	1		
Line/Tube Related :: Line Protocols Not Followed	1		
Operative :: Delayed or Cancelled Procedure	2		
Respiratory Therapy Related :: Equipment Set Up Incorrectly :: Equipment Not Assembled Correctly	1		
<u>Property Related</u>		1.83	1.17
Hospital: Loss: Medication Related	1		
Personal :: Theft :: Property/Belongings	2		
Personal :: Loss :: Property/Belongings	4		
Personal :: Loss :: Medication	1		
Hospital :: Damage :: Facility/Infrastructure	2		
Hospital :: Damage :: Other Equipment/Assets	1		
<u>Falls: Patient/Visitor</u>		7.5	9.09
Walking/Standing	24		
From Toilet	5		
From Bed/Stretcher/Treatment Table	12		
From Wheelchair	2		
Other	1		
From Chair	1		
<u>Medication Related</u>		1.75	1.13
Administration :: Storage, Handling and Disposal :: Incorrect Disposal Method – Medication	1		
Administration :: Extra Dose	2		
Incorrect Route :: SC/IM Intended	1		
Administration :: Incorrect Drug	4		
Administration :: Delayed Dose	4		
Staff Preparation :: Incorrect Patient	1		

Transcription :: Order Not Processed	1		
Administration :: Incorrect Strength/Concentration :: Standardized Strength/Concentration	1		
Incorrect Dose :: Overdose	1		
Extra Dose	1		
Missed dose	2		
Incorrect Drug/IV Fluid	3		
Incorrect Patient	1		
Narcotic Count Discrepancy	3		
Incorrect Regimen :: Order Stopped Too Soon	1		
Administered Without Current Order	1		
<u>Infection Control</u>		17.25	30.50
Failure to Observe Precautions for Identified Pt.	63		
Personal Protective Equipment Issue	2		
Failure to Observe Routine Practices	2		
Failure to Conduct Patient Screening Requirements	2		
<u>Self Harm</u>		4.33	4.93
Self-inflicted Injury	10		
Other	2		
Attempted Suicide	1		
<u>Missing Person</u>		4	2
Absent Without Leave	4		
Left Against Medical Advice	2		
<u>Blood/Tissue Product</u>		1.33	0.58
Blood Product :: Administered Product with Process Error(s)	1		
Blood Product :: Delay In Administering/Dispensing of Product	1		
<u>Medical Imaging Related</u>		1	0
Preparation :: Incorrect Order	1		
Preparation :: Incomplete/incorrect history	1		
Patient Transfer :: Patient Transport Without Accompaniment	1		
Transcription/Reporting :: Incorrect information on report	1		
<u>Smoking/Contraband</u>		1	
Suspected Substance Use	1		
<u>Other</u>	28	28	
<u>Food and Nutrition Related</u>		1	
Food/Supplement Delivery :: Incorrect Tray Delivered	1		

4.2 Qualitative Results

Open-ended comments were obtained from the HSOPSC. As well, two semi-structured interviews were completed and transcribed. Document perusal was performed concurrently.

4.2.1 Modified Constant Comparative Analysis

In keeping with the usual method of engaging in constant comparative analysis (Strauss & Corbin, 1990), the first phase of data analysis involved open coding of the two transcribed interviews and 12 responses from the open-ended comments of the HSOPSC. Approximately 250 concepts were identified through this process. The second step in that process required the identification of approximately 45 categories which encompassed several concepts in each category. Constant comparison of the data and categories was performed until no new categories could be identified within the data. The third step of analysis was creation of approximately eight key categories encompassing the previous identified categories as properties and dimensions. An example of this is seen in Table 15. Constant comparison was continued until no new key categories were identified and all categories were consumed within the key categories and their properties and dimensions. The final step of analysis, namely selective coding, was performed to identify a core theory that spoke to the overall consensus of the data and emergent themes. A construct was then designed to demonstrate the core theory and the relationships between it and the key categories identified.

Table 15

Example of Matrix of Coding

Key Category	Categorical Properties and Dimensions	Categories	Concepts
Influences	<ul style="list-style-type: none"> • Abstract Presence • External Presence • Organizational Presence 	<ul style="list-style-type: none"> • Statistics/Finances • Time • Media • Community • Self • Unit • Senior Leadership 	<p>“Management is only worried about the statistics not the care that is provided to patients”</p> <p>“I feel that it all comes down to money, the fewer the dollars spent the better”</p> <p>“We don’t have time”</p> <p>“I don’t have time for that”</p> <p>“While I understand the wait times and we don’t want the bad press”</p> <p>“Soooo it is really hard because the general public just sees the wait times and that is what management gets coached to”</p> <p>“I want people to like me and I want to make a good impression”</p> <p>“Not always functioning as a team”</p> <p>“Feel like we are competing”</p> <p>“I have thought before that maybe they are like this because they are getting a lot of pressure from above”</p>
	No Influence on self →		
	Ongoing Influence on self		
	Impact of self →		
	Impact of Community		

4.2.2 Core theory model. The emergent model presented in Figure 2 below, demonstrates in descriptive nature the key categories impacted by leadership and the relationship of these with the core theory and resultant consequences. Double arrows indicate the dynamic nature of this model and the relationship between the follower and leader. It is also recognized there is overlap of themes within each category further supporting the notion of the shifting

nature of impact of the leader on the follower. The following sections will describe the dimensions within each key category and give examples from the data obtained.

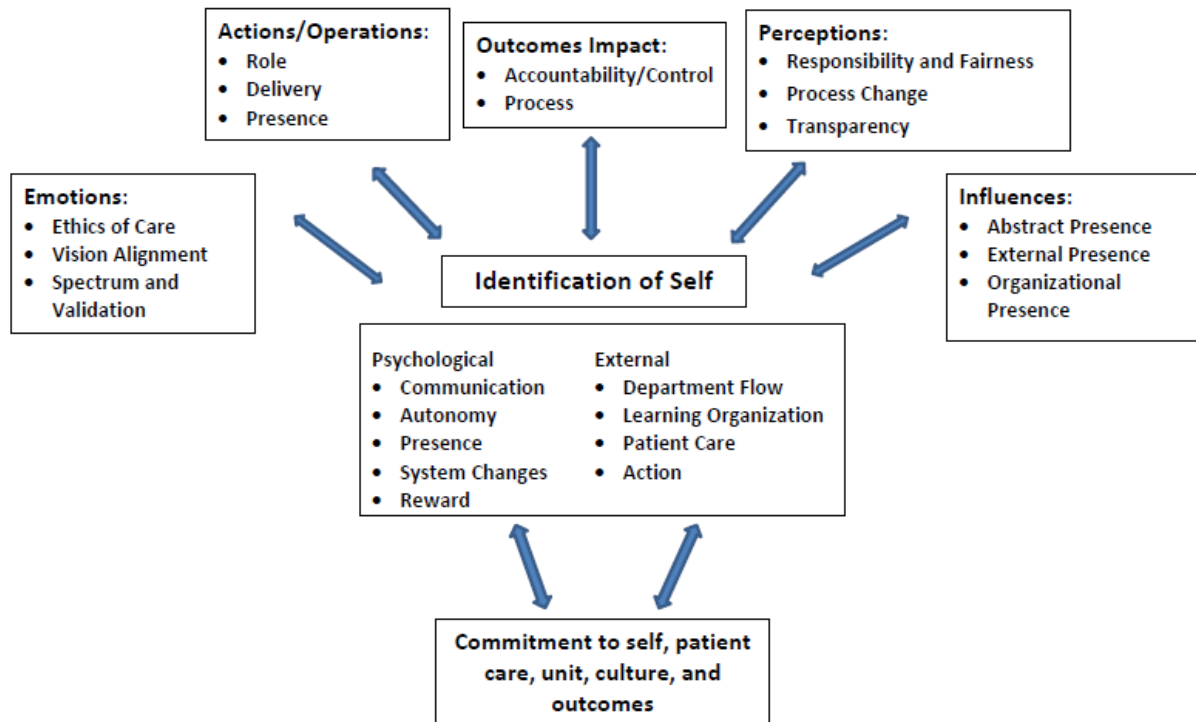


Figure 2. Core Theory Model.

4.2.3 Emotions.

4.2.3.1 Ethics of care. This dimension identifies with the nurses' emotions in regard to the front-line leadership's engagement in ethical decision making. When asked about the process of patient care and current patient safety issues, one nurse identified, "...it was a very stressful night because there were no beds and there was not enough staff to care for the people we had". Another nurse was concerned with the state in which the patients were being seen, "we are now putting people in chairs". When asked about leadership's role in this, one nurse commented, "they are just trying to move people" and another "there is all this shadiness going on too I think". Emotions ranging from sympathy to frustration were expressed based on patient context and the care provided. One nurse related her sense of dismay in a conversation she had

with a patient's family member following an adverse event, "but it is just so hard to say that to someone and they are agreeing. So I don't know, there is not much I can do right now but say I am sorry." Based on the ethical decision making of leadership and current processes implemented within the unit, the nursing staff responded emotionally to the resultant patient care provided.

In respect to leaderships' knowledge about the impact of their decision making on the staff so far as ethics were concerned, a range of themes were identified including nurses' emotions of being upset and angry to a sense of hope and 'benefit of the doubt'. One nurse commented, "I don't think they are trying to bring the morale down and I don't know if they know" [front-line leadership], "I don't know if they know how bad it is out there on the floor", and another, [senior leadership] "you know, so there has got to be pressure there too. But I don't know, you can't take it out on your staff, right? Or else they are not going to be happy working there either". An overlap of emotion and self-awareness was present within the questioning by nursing staff based on the current morale of the unit.

4.2.3.2 Vision alignment. A common theme amongst the nurses participating in the interview process and completing the open-ended questions was focused around the vision of leadership and the incompatibility with their own beliefs and the impact this had on their emotions. One nurse responded, when asked about the impact of the process change, "while I understand the wait times and we don't want the bad press but there does not seem to be a concern with how that affects us, and us feeling swamped and overwhelmed". Another responded [in regard to trialing out the new process], "when we did a trial they sort of gave out an award to who did best that day, I felt this was inappropriate because that is not what we are here to do" and another "[in respect to an AEMS report on unsafe workload assignment

leadership responded] so ok we just need more beds is that it? [nursing responded] no.... I was doing things in the hallway and it became unsafe”. Alignment of beliefs and values were a significant factor in the emotional response of the nurses to their work environment and process change.

4.2.3.3 *Spectrum and validation.* In this key category, elements of empowerment, fear, job satisfaction, and validation were described by the nurses. In general, nurses felt a lack of empowerment within their work environment and expressed this emotional impact on their professional practice and emotional state. Described by one nurse, “they sort of tell you how to do your job when you already know how to do it, which can be a little bit more frustrating”. Another discussed the inabilities of the staff to ‘push back’ on the process changes that occurred. Multiple nurses commented in writing and word, on feelings of aggravation and fear when associated with the process of patient care. Concerns were voiced strongly by one participant in regard to care of patients within the new patient flow system, “I hope that you are not going to ‘kick the bucket’ like in a day or 2 days or 2 hours because I missed something, I missed a symptom that should have told me that this was really critical”. Lack of control and confidence in the process change further impacted the emotions of the nurses and their beliefs in their own abilities to care for patients under those conditions.

The nurses delved further into their feelings when discussing what influenced their contentment within their role. The majority of nurses in survey and interview responses discussed the need to feel appreciated by front-line leadership. One nurse spoke, “If somebody told me “I really appreciated like the work you did today” I would be happy with that”.

Emphasis was placed on words of appreciation from leaders and each nurse being viewed as a

valued organizational member, and the need for leadership, in one way or another, to demonstrate this to the individual staff.

The emotional impact in respect to validation of feelings and actions was identified during the interview when a discussion was initiated on the nurse's experience of filling out an AEMS report and in survey comments. Contrasting opinions were noted. One nurse expressed a positive experience, "I saw action quickly, I was taken very seriously, and it was a positive impact". A second nurse expressed the opposite feeling, "I wrote an incident report and never heard one thing back from them. So it is kind of dependent on what it is. I don't know it's hard. [Upset with lack of support and validation of reporting]. I mean, I used to be very happy". In all contexts, the nurses expressed a need for validation and a distinct emotional response to an absence of or the presence of validation and overall confidence in self being affected by either form of validation.

4.2.4 Actions/Operations.

4.2.4.1 Role/Activity. When discussing the relative impact of leadership on patient safety, the nurses concurred with the need for a greater impact. As one nurse stated, "I think leadership could be doing more, there is a lot, but it is hard for them to sort of impact that [patient safety] when you know they are not out and doing patient care stuff". Associations were identified between the role the leader played and the level of action by leadership on the patient safety needs. One nurse commented, "they are lovely people [referring to front-line leadership], things are just a little bit of a mess down there right now". Confusion on position and power created frustration and loss of trust, "there is supposed to be one specific person that you go to like who is your head person but you know where some of us now run, when things aren't being done? We go to higher leadership because that leader gets things done." The nurse's perceptions

of the leadership's ability to appropriately respond influenced their perceived impact on patient safety within the unit and trust towards front-line leadership.

4.2.4.2 Delivery. The ways in which front-line leadership addressed nurse and patient care matters were described by multiple nurses within the interview process and open-ended comments of the HSOPSC as inconsistent, lacking in trust, and unprofessional. The absence of follow-through was threaded between comments and concerns. When asked about front-line leadership's awareness of the current culture of the unit, one nurse commented, "[unit leadership] is not in touch with the morale of the nurses or if they are, they are turning a blind eye to it". The other nurse remarked on front-line leadership's approach to dealing with issues that occurred most of the time in hallways in passing, "you know, pull me into your office and tell me what you think because I think that is more professional". One nurse commented in regard to front-line leadership "there is some unprofessionalism in our leadership department. Constant with some of them". The other nurse remarked, "if they [front-line leadership] acted differently it would make me appreciate my job more". The method of communication from leaders to nurses- when addressing the needs of the nurses- greatly impacted the nurse's psychological being and how they viewed their work environment.

The manner in which front-line leadership reacted to nursing staff concerns and patient safety issues also had an impact on the nursing staff confidence in the unit. Leadership's ability to obtain the proper information, process the information received, and communicate a decision effectively appeared to be lacking. A recurrent observation noted by the nursing staff in the interviews and survey responses involved leadership's way of listening but not acting, "they hear us and smile and nod and are like I get it and that's the end of the conversation". Participants were frustrated with lack of interest in their input in relation to patient care. Questions about

“why hasn’t anything changed?” and “why are we still going through with this?” were expressed. As spoken by one nurse, “even if they decided to go through with it, but they know how we are feeling, why isn’t that at least addressed?” The mode in which leadership chose to react to the nursing staff’s concerns influenced the nurse’s subsequent trust and assurance in leadership and the unit.

4.2.4.3 Presence. Leadership presence was identified by the nurses by many factors including their extent and type of communication style, physical being, and location of their office. “Willing to talk”, “very open doors”, “makes a point to know our names” were common threads amongst the nurses. Some nurses felt the physical presence of leadership – actually being present and seen- was, overall, supportive while others felt their presence was limited to moments of necessity. One nurse described her frustrations when she felt leadership had limited their presence only to the moment of interest to them and what they wanted to know or find out about, rather than supporting the staff and patient care more broadly.

So it just ends and we have tons of patients just sitting waiting to be triaged and we are trying to clean up the mess from before and the managers are like “its ok it is all gone” so they all go back to their offices and you are left with tons of patients just sitting staring at you.

The lack of support as demonstrated by leadership selective presence impacted the nurse’s ability to care for a patient in a manner the nurse felt was appropriate and safe.

When asked about who they considered were the formal leaders within the unit, confusion in respect to location of office space and role was event. As one nurse commented, “I don’t know if she is a leader-she sits back in the same offices”. The physical presence of

leadership members themselves and their office possessions contributed to the nurse's perception of who was part of the leadership team within the unit.

4.2.5 Outcomes impact.

4.2.5.1 Accountability/Control. When discussing the role of nurses in patient safety issues and specifically AEMS reporting, the nurses had multiple responses. Concerns of control, responsibility, and outcome-based on their actions were discussed. As one nurse responded, "I can't possibly safely take care of all these patients and triage all these patients in a safe manner", another indicated "I have no control over the incident based on [the level and intensity of my] work load". The dimension of AEMS reporting implicated a spectrum of time, control, and professional practice matters. Feelings of self-doubt and being scared were related to the nurse's lack of engagement with the AEMS process. One nurse responded, "if they told us to "write your incident reports on patient falls and all that stuff" I think a lot more people would do it". Discouraged by front-line leadership and formal management, fearful of potentially punitive responses, and concerns about a lack of information related to reporting were also threaded throughout the nurses' comments.

4.2.5.2 Process. In response to AEMS reporting, similar comments were targeted regarding the action and reaction by leadership to the filed report. Many nurses believed that if a nurse did file an AEMS report, things would get done. The reason for reporting ranged from the need for documentation [versus verbal] to what type of report was filed. As responded by one nurse on why AEMS reports are filed, "people are super comfortable putting in AEMS when it's about workplace violence, unsafe workload, disrespect in the workplace because those are things out of their control" and another "so people are comfortable to do that [in regard to filing AEMS reports out of their control] because it is not going to come back on them, "something negative

can't really come out of those things against the person with is submitting". The nurse's assumption of the potential reaction by leadership to the report impacted the nurses follow through on the process of AEMS reporting.

The reason most nurses (based on the two interviews and open-ended comments) did not report adverse events or near misses involved the sheer quantity and nature of their workload, a lack of education on the process itself, and the perceived lack of effective education for the nurses following the incident. When asked about impeding factors to filing out an AEMS report, many nurses' comments echoed the comment of one, "you know you are already working so hard". One nurse provided a specific example in relation to medication administration and the type of learning provided, following an event;

So I think that people don't want to put an AEMS in for that because they don't want to be sat down and told to do their set of 'medication rights'. Uhmhhh, because like that is almost the kindergarten of nursing, if you will.

Leadership's inability to effectively support the nurses within the context of AEMS reporting impacted the motivation and confidence in their ability to submit the reports.

4.2.6 Perceptions.

4.2.6.1 Responsibility and fairness. Throughout the discussions of patient safety culture and outcomes it was evident within both interviews and open-ended comments on the HSOPSC, that the nursing staff perceived themselves to be fully accountable for all adverse events. As an example from one nurse (but reflective of many nurse responses), "when someone dies, when something gets missed, the first person that misses something is the nurse because you are the first point of contact." Another stated, "how can one nurse be expected to be responsible for 30 patients in the waiting room of an emergency department and not expect a negative outcome.

But who do you think would get the blame?” Another remarked, “when an adverse event does occur and is reported, it is the nursing staff that gets reprimanded”. Repercussions related to the fear of being fired or suspended [which had happened] were voiced with the implication of lack of professional control [of nurses] and fairness by leadership in respect to the incident.

4.2.6.2 Process change. In discussions over the patient flow process change within the emergency department and open-ended comments, nurses expressed concerns related to current work conditions and its impact on patient safety. Feelings of being forced to work under suboptimal conditions, unsafe work assignments, and potential areas of ‘status quo’ were noted. Namely, “certain areas have become status quo and are no longer concerning to management when they are actually potentially dangerous situations such as patient volumes”, another, “[we are] forced to work under conditions that make patient care unsafe”. When asked about their perception of leadership in regard to the process change, one participant believed leadership thought, “the fewer staff caring for patients the better, [but that was] to the risk of the patient”. Another nurse described a situation when an AEMS report was submitted based on an unsafe work assignment due to the process change. Another stated, “the hospital seems too worried they have gone too far [with the process change] that they can’t turn back now”. Another spoke frankly, “I think there is more they could be doing in order to impact patient safety...I mean a lot”. It was expressed by the nursing staff that, through leadership’s acceptance of status quo and apparent lack of interest in patient safety issues, the nurses’ ability to provide safe patient care was compromised.

4.2.6.3 Transparency. When asked to provide three specific attributes of their current leadership, the interviewees found this difficult to answer. Instead, conversations revolved around the concept of transparency and the extent to which each leader demonstrated this form

of openness in how they conducted themselves. As one nurse remarked, “I respect that this leader is not playing any sort of games”, another nurse said, “you know what is going on with this leader”. Other comments included, “shoot from the hip”, “pleasant”, and “very realistic”. Clear communication in respect to meetings associated with discipline or praise were applauded yet concerns of others were related to trust and accountability associated with the meeting, “I have heard from other staff [that] anything, just make sure anything you get from this leader is in writing because this leader is quick to back track if like higher up doesn’t really approve of what this leader thought was okay”. The notion of transparency that was perceived by nurses was helped or hindered by the action of the leader.

4.2.7 Influence.

4.2.7.1 Abstract presence. When asked about leadership’s influence on patient safety, recurrent accounts of finances, paperwork, and statistics were brought up. As stated by one nurse, “I feel that it all comes down to money, the fewer dollars spent the better.” Another commented, “management is only worried about the statistics not the care that is provided to patients”. One nurse related the impact of finance and staff abilities, “being understaffed is dangerous and it is only management that can give the okay budget wise to put more staff in”. The spectrum of care provided was directly influenced by the budgetary worries of the nurses and leadership’s impact on this concern.

A second theme arose amongst the majority of responses in respect to AEMS reporting. Time was an ever-present issue amongst the staff [mentioned by almost all nurses participating in the interviews and open-ended comments] and the dynamic influence of this on patient care was evident, “I would rather get things done for my patient in a timely manner than complete an AEMS report”. One nurse felt torn in regard to this dilemma and looked for leadership’s

support, “it would be nice to have someone just there and willing to do it but sometimes it is hard to find that person”. Time, verbalized by the nursing staff as an influential factor, was also identified as an area of impact by leadership. With leadership’s ability to influence the nurse’s workload and requirements, time became a situational factor that reduced the number of nurses who fully engaged in AEMS reporting.

4.2.7.2 Organizational presence. When asked about leadership’s impact on nursing professional practice, common themes emerged relating to their impact on the nurse, unit, and senior leadership. The nurses voiced their need for support from leadership in the spectrum of patient care choices to career choices. Many felt this support was inconsistent to the extent that sometimes it was provided and many times not. Mentioned by one nurse yet echoed in many similar comments from other nurses was, “as a leader you want to show [those] who you are leading that their work is appreciated and, if you don’t get shown that, it sort of makes you angry”. This emotional impact can influence the nurse’s psychological health and professional practice.

As a unit, team dynamics were impacted by leadership actions. A continuum of team dynamics involved the nurses’ feeling of needing to work together to provide appropriate patient care to feelings of or working individually as if they were in a competition. Internal conflict with the nurses’ own intrinsic motivation and participation in incentive-based work assignments created a sense of unit discourse. The lack of “feeling like a team” amongst nursing staff impacted the nurses’ ability and motivation to work in this type of environment and, in turn, resulted in a “loss of great nurses”.

Senior leadership presence was in one sense, a type of shadow leadership for most nurses who were interviewed and filled in the open-ended comments. Senior leadership presence was

used as an explanation for the actions or lack thereof, of their leaders. Multiple comments on the basis of leadership's decision making were made in respect to the potential "pressure from above". As commented by one nurse, "I am thinking that has to do with people up above because I didn't see an issue with why we have casuals". The perception of senior leadership's presence impacted the nurse's understanding of front-line leadership actions and provided an explanation they did not feel they were receiving from unit leadership themselves.

4.2.7.3 External presence. Questions related to the potential impact of leadership on organizational process created lengthy and rich discussion around the recent patient flow changes and the actual or potential influences of both media and community. As expressed by one nurse on why there was that type of roll out, she said "because what gets us in the [news] papers is our wait times. So what are we working on....our wait times with disregard to patient safety". Another nurse stated the same concerns in respect to the community, "so it is really hard because the general public just see the wait times and that is what management gets coached to". The perception on nurses' work amongst participants regarding external influences was that they were not supported by leadership based on leadership's lack of communication with staff in association with this. Staff were left to react and respond to the effects of external influences, such as a patient commenting negative about wait times, individually. No nurses mentioned being guided by the front-line leadership so far as dealing with comments from patients and hospital visitors about wait times and other such media-identified concerns.

4.2.8 Identification of self.

4.2.8.1 Communication. With shortcomings in effective communication present within the unit, the nurses related disappointment and lack of knowledge concerning their own abilities to communicate with others in respect to their employment and process change. As stated by

one nurse, “I think that they don’t know what they are allowed and not allowed to tell us and say”. Another participant claimed, “I don’t know what I am allowed to say”. Communication in regards to changes within the unit many times were provided through “emerg wide emails” leaving many of the nurses feeling a disconnect to the change process and front-line leadership. Offerings of debriefs to be provided by front-line leadership apparently never materialized, leaving the staff seemingly lost and frustrated.

When discussions did occur between leadership and nurses in relation to their nursing needs, comments of sarcasm and disrespect from some leaders left the staff members feeling alone, “you are telling someone to suck stuff up and that is not even listening to your employees and what they need from you.” One nurse recalled a previous leader whom she felt was great [during a conversation about taking a job], [the leader said], “so what I hear from this is you are not thinking about you – she was thinking about me”. The need to be heard and the value of effective communication in addressing some nurses’ needs were identified as an essential part of the identification of oneself as a nurse.

4.2.8.2 Presence. When asked about leadership’s impact on their professional practice, many observations were made by the nurses that queried whether leadership was either out of touch or simply lacked self-awareness, “I am concerned they are becoming too far removed to really appreciate the impact on the front line workers”. Suggestions to improve this attribute included, “maybe if they took like three shifts to work alongside us and really see how it is impacting staff”. Relating it back to them, one stated, “I work hard when I am angry and I work hard when I am not angry”. Another identified with the leader’s ability to relate to the needs of the unit, “[comment in regard to drinks outside the water stations] this is peanuts, you are doing your job, washing your hands, people’s lives are important”. The leadership’s presence within

the unit and choices of influence on the nurse's professional practice resulted in the nurse's self-reflection on their practice and impact of their own actions and emotions on patient care.

4.2.8.3 *Autonomy.* The nurses' sense of autonomy was directly impacted by the actions of leadership and culture of the unit. As described by one nurse but reflective of many participants' comments,

at work we have expectations from our leadership and then when we fulfill those expectations there is always something else being thrown at us. "Do this do that, oh this wasn't done properly, do this". Just when you think you have had enough they throw something else at you.

The nurses' confidence in providing safe patient care within their role was impacted by the ongoing expectations and actions of leadership.

4.2.8.4 *Reward of work.* Several implications from the process change, culture, and leadership influence, were commented on by the nurses in relation to rewards of work. As put forth by many nurses during the interview process and open-ended comments, a recent change in the ability of nurses to access vacation resulted in frustration over troubling decision making. Described by one nurse, "I have put in all this time, I give my blood sweat and tears for this organization and I can't get a day of vacation?" Increased attrition of staff was noted by most participants. Reward-based measures were provided to individual staff but with limited commitment or buy-in that the nurses' comments indicated to be as a result of a lack of a shared vision. Transactional implications were referred to by most as a negative experience or a contractual way of interacting with leadership.

4.2.8.5 *System changes.* Most nurses who responded to the open-ended comments and participated in the interviews recognized the need for process change and structural influences on

their practice. It was understood that “systematic processes cannot be fixed overnight” and that leadership’s focus was on “departmental flow”. The nurses also felt compelled to address the potential impact of system changes on safe patient care. Simplifying the process created fear amongst and within the nurses in terms of their ability to function within the new process. Many nurses had a sense of ownership for the actions of others, especially nurses who had less experience. As expressed by one nurse, “those things come with experience and your environment you have been trained in”. Another commented, “last shift we called in casual RN’s who hadn’t worked in the unit in over one year with no re-orientation. How is this safe?” The system changes led by leadership heightened the sense of responsibility and, in one sense, fear because of concerns nursing staff had on their ability to safely care for patients.

4.2.8.6 Department flow. When discussing the resultant effects of leadership’s focus on department flow, most nurses expressed in writing or interview, a sense of increased pressure on both fellow staff and indeed those in leadership. Nurses felt, as a department, they were considered “a catch all for the whole hospital and we can never say ‘no’ even if short staffed as often we are”. They felt a sense of ‘push back’ from the inpatient units rather than support for the process. Optimistic views on the theory and potential application of the process change were expressed with cautious praise so far as patient safety was concerned: “We are at risk for making grave mistakes that will impact people’s lives if we are that busy”. A need for front-line leadership support was also sensed when having to deal with other units within the organization.

4.2.8.7 Learning organization. Nurses struggled with the ability to act in ways that were consistent with their views of what it meant to be part of a learning organization in the current state. As remarked by one nurse, “we say we are but we don’t feel like one”. There was consensus around the difficulty in becoming a learning organization in the context of the current

culture of the unit. A common theme in nurses' responses was expressed by a participant who noted it was "one thing that is really hard in our department at the moment". The current lack of team work perceived to be supported by leadership, resonated with many nurses in respect to the inability to work within this type of un-team like environment. As commented by one nurse, "we need to work together as a team in order to do things and get them done". The need for leadership support and action was made evident by one nurse, "front line workers can try and stimulate change only so much but we are bound by policy and it is leadership that can make those policy impacts". Interest in both further education and professional learning were discussed as ways to improve patient safety and department flow supporting the notion of a learning organization.

4.2.8.8 Patient care. Expectations by leadership were described as consistent and appropriate in respect to rules and requirements of time into work, using water stations, breaks, etc. Concerns surfaced in regard to the nurses' ability to practice safe patient care when faced with "dangerously low staffing" or "staff RN's doing non nursing duties". The nursing staff's ability to provide safe patient care was impacted by leadership through their ability to hold the staff accountable for their actions as well as to provide a safe environment and support system for safe patient care.

4.2.8.9 Action. When asked how the current culture and leadership presence was impacting their practice, emerging properties were identified. Multiple responses from the survey and interview included, "people are dropping like flies around our department" and "they are leaving because they are not happy and you [leadership] are making a lot of us more upset". Increased sick days were noted as contributing to added workloads and stress for those staff on

duty. The extent of staff engagement was, according to most participants, closely linked with the reward and appreciation given to staff from front-line leadership.

4.3 Summary

The results obtained from this study were diverse and complex. Further document perusal was performed in relation to the learning organization and department as a whole so as to provide greater context of the environment of the case study. As well, during the qualitative analysis, an ongoing review of the literature was undertaken for maintaining currency of the topic of interest, the constant comparison process, and development of the core theory model. Subsequent triangulation of the data was performed and is discussed in Chapter 5.

Chapter 5

Discussion of Findings

5.1 Purpose of Study

The purpose of this mixed-methods case study was to understand, through the viewpoints of front-line nursing staff, the impact front-line leadership had on a patient safety culture and patient safety outcomes in a (hospital that regarded itself as) a learning organization. As noted earlier in this thesis, front-line leadership was defined as the two unit coordinators and manager who had direct reporting structures to the nurses. The study's purpose of obtaining a deeper understanding of 'how and why do leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization' was identified as an area of inquiry based on both current gaps in the literature, and more broadly, the current demands on Canadian healthcare as a whole. In undertaking this research, one intention was that findings may provide an opportunity for knowledge translation within the hospital-based learning organization and indeed other relevant healthcare facilities. Areas of interest for the researcher included:

- 1) What is front-line leadership's role in creating a patient safety culture and preventing adverse events and 'near misses' in a healthcare-based learning organization?
- 2) What is nursing's role in creating a patient safety culture and preventing adverse events and 'near misses' in a healthcare-based learning organization?
- 3) Is there a significant relationship between specific leadership attributes and a patient safety culture?
- 4) Is there a significant relationship between specific leadership attributes and adverse events or 'near misses' related to patient safety?

- 5) In what ways do semi-structured interviews and additional sources provide further corroboration of the statistical findings between authentic leadership attributes and patient safety culture and patient safety outcomes, via an integrative mixed-methods analysis?

5.2 Leadership Attributes and Patient Safety Culture

In terms of the data obtained from all sources, common themes relating to how authentic leadership practices impacted patient safety culture were identified. So far as the *Hospital Survey on Patient Safety Culture* (HSOPSC) was concerned, moderate to strong positive correlations were identified between all four components of leadership studied with the overall grade given by the nursing staff on the unit's patient safety (CultMeaE) and the overall safety culture measure (Culttot) ($r = .43$ to $.71$ for CultMeaE) and ($r = .46$ to $.65$ for Culttot) respectively.

On evaluation, LeadB1 was most relevant to the ethical behaviours and self-awareness of front-line leadership. LeadB2 assessed the leadership's extent of transparency and balanced processing. LeadB3 and LeadB4 both evaluated the nurse perceived ethical and moral conduct of front-line leadership. As stated previously in Chapter 3, the HSOPSC was designed to measure group culture within a unit. Notably, correlations made that were based on the measurement of group culture were also reflected in the individual responses of the participants. All 12 dimensions of the HSOPSC were identified within the features of the key categories impacted by leadership and subsequently impacted the nurse's "identification of self". Key categories include: emotions, actions/operations, outcomes impact, perceptions, and influences. Specific attributes of leadership reflective in the variables LeadB1-B4 are again reflective in the psychological and external components of the "identification of self". Therefore, the same

conclusions can be drawn so far as the nurses' commitment to a patient safety culture based on leadership's impact on their professional development (as recognized both through the quantitative and qualitative data). Within all elements of data collection and analysis, the first hypothesis was confirmed, namely that authentic leadership practice was identified as a positive correlative factor to patient safety culture. These findings support earlier work within the arena of authentic leadership and areas of work life, psychological capital and trust (Walumbwa et al., 2011; Wong & Giallonardo, 2013).

Further significance in findings was identified in respect to theorized authentic leadership attributes and current leadership practice within the department. As noted within the data from the *Authentic Leadership Questionnaire (ALQ)*, the lowest raw score was acquired from the ethical/moral component of leadership. This notion of limited 'moral courage' was supported by the comments obtained in the qualitative section of this study. One nurse's telling example summed up the need for enhanced moral/ethical leadership: She noted "certain areas have become status quo and are no longer concerning to management when they are actually potentially dangerous situations such as patient volumes". The perceived moral decision making - or minimal presence of it - by front-line leadership was regarded by nurse participants as dangerous to patients in particular and unethical. Quantitatively, the positive correlation of this leadership attribute with patient safety culture was identified. It can therefore be concluded, that an ethical/moral component of leadership indirectly impacts the patient safety culture. According to the nurse participants in this study, potentially it is the most problematic element to maintain as a front-line leader within this environment. This notion is supported throughout literature sources on ethics and leadership (Donlevy & Walker, 2011; Tuana, 2014). Leadership can struggle with the concept of 'moral courage' as identified as an area of potential inadequacy

of the current leadership represented in this study. In support of authentic leadership practice, this inadequacy was identified by leadership within the questionnaire response, possibly through self-awareness.

Notably, the highest score associated with the leader's perception of their authentic leadership practice was in regard to their ability to be self-aware. This perception of self-awareness was not echoed in the nurses' perception or culture of the unit. It was assumed, based on the findings, that front-line leadership was limited in their scope of self-awareness rather than the alternative (in which they were aware but uninterested in improving the culture). This assumption of limited scope is based on the organization's emphasis on and foundation for learning through a learning organization model plus the requirement by *Accreditation Canada* for the organization to sustain a patient safety culture. The assumption is also supported through previous research with similar findings related to the inconsistencies of leadership and followership perceptions of the leader's characteristics and the identification that follower ratings are more valid in predicting leadership effectiveness than the leader's themselves (see for example Agnew & Flin, 2013; Kim & Yukl, 1995; McGuire & Kennerly, 2006).

Attribution theory, in which the judgement of a leader is not "simply based on what the leader has done but also what the follower attributed to the leader" (Gardner et al., 2005, p.348) is a concept of significance in relation to this identified awareness. Attribution theory is significant in relation to the concepts discussed in the paragraph above and potential impacts on the follower in regard to their perceptions of the leaders. In support of the premise made above, it is also recognized that this theory supports the need for self-awareness and greater understanding by leaders of the notion that followers assign their own meanings to the actions and/or achievements of leaders. In regard to the findings from this study, it was identified within

the core theory (and supported by statistical analysis) that the nurses perceived the leaders to be lacking in self-awareness. Specifically, leadership appeared to lack the ability to demonstrate insight regarding how the enactment of their leadership impacted others. Whilst it can be argued that any quest for such self-understandings by leaders is a most challenging one, this inability limited a perception of the authenticity in their leadership practice and the ability to foster positive self-development as identified within the context of “identification of self”.

The core theory model, ALQ raw scores, and statistical inter-correlations demonstrated both the necessity of self-awareness and authentic leadership practice for a positive patient safety culture and the significant impact this had on the individual and team within the unit. It is also recognized that the leadership’s perception of their own attributes (based on the one respondent) did not coincide with the nurses’ perception and overall culture of the unit (from the standpoint of nurse participants) further demonstrating the influence of the front line staff on the culture and the need for this type of mixed-methods study.

To identify why these leadership attributes impacted patient safety culture, triangulation was performed between the document perusal of the defined culture of the organization, components of the HSOPSC, and the core theory model. Subject matter related to the need for shared values and beliefs around what is important and how things operate and the interaction of all of this with the work unit and organizational system was identified within both the qualitative and quantitative components of this study. Findings included the positive correlations between the leadership attributes and culture measures and key categories within the core theory model. Behavioural norms in regard to patient safety were created within the ethos of nurses’ personal and professional development and reflected in their commitment to the patient safety culture. Based on numbers alone, these organization members are part of the largest group within the unit

and therefore have a great influence in shaping and maintaining the culture in which they work. It was identified through this study that their influence as nurses was mediated by the impact of leadership on all aspects of their identification of self.

5.3 Leadership Attributes and Patient Safety Outcomes

The two variables used to identify patient safety outcomes were Outnumto which related to the number of *Adverse Events Management System* (AEMS) reports submitted within the last 12 months, and Outreptot which was a sum of three questions related to the frequency of reporting of level 1 and 2 AEMS reports. As indicated earlier, validity of the sum score was satisfied with $r = .45$ to $.69$, $p < .001$, $power = 1$ for all three item-item correlations. Triangulation demonstrated a convergence of data associated with why AEMS reports were not being submitted. Quantitatively, there was no significant correlation between Outnumto and Outreptot. Tallies of AEMS reports in regard to patient safety identified within the one year period were the majority of level 1 and 2 reports. Highest incidences were regarded in the subcategories of laboratory errors (35.83; 56.45) and infection control (17.25; 30.50). Similarly found within the qualitative analysis, claims were made based on “lack of control” or “not wanting to report their own near misses”. The decision making factor on submitting reports on adverse events or near misses appeared to be related to the impact on the nurse submitting the AEMS report more so than the level of the event itself. Put another way, nurses made a choice to report some adverse events or near misses on the basis of if and how leadership would react to the report. No correlation was identified between the CultMeaE and outcome measures and Culttot and Outnumto of the HSOPSC which is consistent with the findings in relevant current literature (Groves, 2014).

In respect to correlations, it was identified that a weak and moderate negative correlation was identified between LeadB1 and LeadB2 and Outnumto ($r = -.28, p < .05$; $r = -.34, p < .05$, respectively). In regard to qualitative analysis, this inverse relationship of leadership attributes and total number of adverse events or near misses reported was further supported by the key categories of Emotions, Outcomes Impact, and Perceptions within the Core Theory Model. During one interview, a nurse was asked to describe three attributes of the current leadership. The participant's response identified two attributes about one leader and was, "will applaud you when you do something good but will be the first to tell you when you screwed up too". This comment demonstrates a leader's ability to support a positive ethical climate while attempting to address patient safety concerns. It was assumed, based on the findings, that positive authentic leadership practice would be ultimately reflected in a decrease in patient adverse events based on the presence of a learning environment rather than a culture of blame being present thereby supporting the second hypothesis presented. The impact of a learning environment is consistent with the cultural findings by Mardon et al. (2010) and the influence of event reporting, feedback, communication, and non-punitive responses on patient safety incidences.

No correlation was identified between LeadB3 and LeadB4 and Outnumto in contrast to the significant correlations with LeadB1 and LeadB2. In respect to the core theory model, these findings were reflective in terms of the limited association of LeadB3 and LeadB4 attributes with the external components of "identification of self" and patient safety outcomes compared to the significant correlations of a leader's ability to support the psychological self (LeadB1 and LeadB2) and patient safety outcomes. Observations of the ALQ results demonstrated the lowest raw score in relation to ethics and morals. The lack of correlation between the ethical components of leadership and total reports filled out may be an example of the leader's self-

assessed, limited ethical and moral character and vast differences in experiences of the staff on adverse event reporting.

In respect to general Level 1 and Level 2 reporting, it was identified that LeadB3 had a strong positive correlation with Outreptot ($r = .57, p < .001$) and LeadB4 had a weak positive correlation with Outreptot ($r = .29, p < .05$). These results support the premise that the expectation by leadership for ethical patient care and a moral climate supports an environment for the reporting adverse events and near misses by nurses. This premise is further correlated with the significant findings of the majority of AEMS reports being level 1 and 2 and the significant moderate positive correlation between Culttot and Outreptot ($r = .33, p < .05$). A patient safety culture is positively correlated with adverse event reporting of level 1 and 2 incidences. The core theory model emulates this correlation through the impact of leadership on the key categories of Outcomes Impact and Influences. Intentional reporting based on these findings were expressed by one nurse when discussing the reasons staff report specific adverse events and near misses, “know now that if you file a report things are going to get done”. Action and reaction by front-line leadership promotes further use of the AEMS and a culture of understanding. This only holds true as long as the underlying intention is not created based on the assumption of leadership’s reaction to the nurse individually. As identified by the organization itself in one of its policies and procedures, ‘reporting adverse events in AEMS is a cornerstone of safe practice and a measure of progress toward achieving a culture of safety’. The difficulty lies in the ability to create a culture that is truly supportive of this throughout the organization.

Consistent within other literature sources, one area still in question related to the outcomes-based analysis is in regards to the nurse’s commitment to AEMS reporting.

Correlations were based on the subjective information given by the staff which has been identified as an area of possible limitation (Squires et al., 2010). Comments within the qualitative section suggest the number of AEMS reports were limited based on a number of factors. If that is true, there is a potential that the correlations performed may be inaccurate. In support of the correlations found, in addition to the subjective findings (and contrary to other studies that were confined to only these subjective data and findings), the objective AEMS data did support the associations made with level 1 and level 2 incidences and subcategories. Even if the reports were limited (based on a culture of blame and shame was concerned) (Sexton et al., 2002), the multiple data sources support the positive correlation between attributes associated with authenticity (LeadB3 and LeadB4) and the number of reported level 1 and 2 incidences. In respect to the overall reports submitted, this negative correlation would still be pertinent based on the findings related to the impact of the leadership attributes on the patient safety culture. With a positive patient safety culture, it has been demonstrated in previous studies (Ginsburg et al, 2010; Hofmann & Mark, 2006; Mardon et al., 2010; Squires et al., 2010) that there is a decrease in patient safety issues and findings within this study are supportive of this claim as well.

In the current study, how leadership attributes impact patient safety outcomes surfaced as a relationship between the leader's requisite impacts on the environment associated with patient care, the unit processes regarding the way the patient care is provided, and on the front line staff who provide the care. Within the leadership role, leaders have the ability to put forth process change and manage unit processes. Inevitably, the environment provided for patient care impacts the nurses and their care to the patients. This notion is supported within the core theory

model. Even though leadership may not have direct contact with patients (identified by the participants) their level of impact on their care is important.

There are also many reasons why leadership attributes impact patient safety outcomes. As front-line leadership, one has the unique ability and opportunity to impact the nurses who are directly providing patient care. Such a concept is supported in the literature (eg. Hanrahan et al., 2010). They not only influence the front line staff's abilities to practice safe patient care but also their psychological state and professional practice as a nurse through, for example, authentic leadership practices. The leadership's presence, support in process change, and accountability impact the nurses' ability to manage patient care, and submit AEMS reports. Almost invariably, leadership are the deciding factor on how the nurses will be impacted and/or report the event or near miss. As identified within the correlations, AEMS reports, and the core theory model, as well as supported within the current literature (Gray & Williams, 2011), it is clear that without the support from front-line leadership for a patient safety culture and learning organization, the potential for recurrence of adverse events is inevitable.

Based on the significance of the component of self-awareness within authentic practices, it was of further interest to identify any areas of follower self-awareness in this study. In reviewing the findings, limited information was obtained related to this concept. It was not directly asked about within the interviews and was also not identified in the comparative analysis. Clearly, the direct impact of nursing staff on patient safety and culture has been identified within this study. However, it is also important to note that with any lack of leadership self-awareness within an authentic leadership practice, limitations are also likely present in the development of follower self-awareness to a greater or lesser extent.

5.4 Limitations

It is understood as with any study, there are limitations associated with the research. One area of concern is related to the low response rate of 26.1% for the survey responses. This rate is similar to another study within the same context namely research by Agnew et al. (2013). In an attempt to identify significance in the quantitative findings, post-hoc powers were run for each correlation. Importantly, all factors in this research that were significant did have a satisfactory post-hoc power and there were enough data that were significant for triangulation of results.

A second area of potential limitation was in relation to potential common method bias. This can occur due to the fact the safety culture items and safety outcomes were collected from the same source (Agnew et al., 2013; Groves, 2014). This possible inflation of relationships between the data was limited based on the use of multiple sources of information and triangulation (for analysis purposes) rather than just these two data points.

A third potential area of limitation included the use of subjective outcome reporting as part of the patient safety outcome measurements. This was discussed earlier in this thesis and identified as a potential area of concern. With the use of a mixed-methods design, it is believed this limitation is minimal due to the triangulation of data for analysis purposes occurring rather than reliance on bi-variates (as seen commonly in some studies with the same limitations).

A final potential area of limitation is in reference to the cross-sectional study design. It is recognized that data obtained during this fixed point of time may not be representative of the group within the study during another extended point of time. This is an area of interest for future validation of study results.

Chapter 6

Conclusions, Implications, and Recommendations

6.1 Review

Given the current budgetary challenges faced by Canada and the province of Ontario in particular, publicly funded hospitals face strained finances and need to limit, conserve, and optimize in their operations. Improving patient safety is recognized by *Accreditation Canada* as a key area of need and therefore of major importance to society and health professionals. As identified earlier in the literature, elements of a safety culture include effective leadership. Also noted earlier was that a deeper understanding of ‘how and why’ had not been previously addressed in this area of inquiry. This exploratory mixed-methods case study sought to therefore understand ‘how and why leadership attributes impact a patient safety culture and patient safety outcomes in a learning organization’. This question prompted other more specific questions related to the study sample involved and the type of research employed (See Table 16). It was the belief of the researcher that this mixed-methods exploratory case study may provide a glimpse into understanding this phenomenon and provide the opportunity to advance and transfer knowledge to others.

Table 16

Research Sub-questions and Conclusions

Sub-questions:	Conclusions
<p>1) What is leadership's role in creating a patient safety culture and preventing adverse events and 'near misses' in a healthcare-based learning organization?</p>	<ul style="list-style-type: none"> • It can be concluded that an ethical/moral component of leadership indirectly impacts the patient safety culture. • The inability for leadership to self-reflect limited a perception of the authenticity in their leadership practice and the ability to foster positive self-development of nursing staff as identified within the context of "identification of self". • An inverse relationship of leadership attributes and total number of adverse events or near misses reported was evident in the key categories of Emotions, Outcomes Impact, and Perceptions within the Core Theory Model. • A positive authentic leadership practice would be ultimately reflected in a decrease in patient adverse events based on the presence of a learning environment rather than a culture of blame. • Within the leadership role, leaders have the ability to put forth process change and manage unit processes. Inevitably, the environment provided for patient care impacts the nurses and their care to the patients. • Leadership not only influences the front line staff's abilities to practice safe patient care but also their psychological state and professional practice as nurses. • The leadership's presence, support in process change, and accountability impact the nurses' ability to manage patient care, and submit AEMS reports. Invariably, leadership are the deciding factor on how the nurses will be impacted and/or report the event or near miss. • In this current study, it was clear that authentic leadership attributes have the ability to impact the front line nurses by promoting positive and ethically focused professional development.

<p>2) What is nursing's role in creating a patient safety culture and preventing adverse events and 'near misses' in a healthcare-based learning organization?</p>	<ul style="list-style-type: none"> • Nurses' commitment to a patient safety culture is based on leadership's impact on their professional development. • It was identified within the core theory (and supported by statistical analysis) that the nurses perceived the leaders to be lacking in self-awareness. Specifically, leadership appeared to lack the ability to demonstrate insight regarding how the enactment of their leadership impacted others. • It is also recognized that the leadership's perception of their own attributes (based on the one respondent) did not coincide with the nurses' perception and overall culture of the unit (from the standpoint of nurse participants) further demonstrating the influence of the front line staff on the culture. • Behavioural norms in regard to patient safety were created within the ethos of nurses' personal and professional development and reflected in their commitment to the patient safety culture. • Typically, nurses look for guidance and support to be "the best they can be" and, in turn, where possible they provide the care that is expected for each patient under their watch. Leadership's intentions and actions impact the nurses' abilities to develop themselves and provide the environment and care needed for patient safety. • This large 'core group' of hospital employees shapes the culture of the work environment and provides the care to the patients in need.
<p>3) In what ways do semi-structured interviews and additional qualitative sources provide further corroboration of the statistical findings between authentic leadership attributes and patient safety culture and patient safety outcomes, via an integrative mixed-methods analysis?</p>	<ul style="list-style-type: none"> • Correlations made that were based on the measurement of group culture were also reflected in the individual responses of the participants. All 12 dimensions of the HSOPSC were identified within the features of the key categories impacted by leadership and subsequently impacted the nurse's "identification of self". • The core theory model, ALQ raw scores, and statistical inter-correlations

	<p>demonstrated both the necessity of self-awareness and authentic leadership practice for a positive patient safety culture and the significant impact this had on the individual and team within the unit.</p> <ul style="list-style-type: none"> • Key categories of Outcomes Impact and Influences support the positive correlation between attributes associated with authenticity (LeadB3 and LeadB4) and the number of reported level 1 and 2 incidences. • As identified within the correlations, AEMS reports, and the core theory model, as well as supported within the current literature (Gray & Williams, 2011), it is clear that without the support from front-line leadership for a patient safety culture and learning organization, the potential for recurrence of adverse events is inevitable. • Triangulation demonstrated a convergence of data associated with why AEMS reports were not being submitted. Nurses made a choice to report some adverse events or near misses on the basis on if and how leadership would react to the report.
<p>4) Is there a significant relationship between specific leadership attributes and a patient safety culture?</p>	<ul style="list-style-type: none"> • A moderate positive correlation was observed between: LeadB1 and CultMeaE, $r(45) = .43, p < .001$ LeadB1 and Culttot, $r(45) = .46, p < .001$ • A strong positive correlation was observed between: LeadB2 and CultMeaE, $r(45) = .71, p < .001$ LeadB2 and Culttot, $r(45) = .54, p < .001$ LeadB3 and CultMeaE, $r(45) = .67, p < .001$ LeadB3 and Culttot, $r(45) = .65, p < .001$ LeadB4 and CultMeaE, $r(45) = .56, p < .001$ LeadB4 and Culttot, $r(45) = .51, p < .001$ • The hypothesis was confirmed that nursing staff who report to front-line leadership who demonstrate authentic leadership attributes, work within a department that evidences a heightened patient safety culture.

<p>5) Is there a significant relationship between specific leadership attributes and adverse events or 'near misses'?</p>	<ul style="list-style-type: none"> • A weak negative correlation was observed between: LeadB1 and Outnumto, $r(45)=-.28, p<.05$ • A moderate negative correlation was observed between: LeadB2 and Outnumto, $r(45)=-.34, p<.05$ • The hypothesis was confirmed that nursing staff who report to front-line leadership who demonstrate authentic leadership attributes, experience less adverse events or near misses in relation to patient safety issues and thereby work in a context of improving patient safety outcomes. • A weak positive correlation was observed between: LeadB4 and Outreptot, $r(45)=.29, p<.05$ • A strong positive correlation was observed between: LeadB3 and Outreptot, $r(45)=.57, p<.001$ • These results support the premise that the expectation by leadership for ethical patient care and a moral climate supports an environment for the reporting adverse events and near misses by nurses (Level 1 and 2).
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6.2 Conclusions and Implications

Within this exploratory mixed-methods case study involving an Emergency Department supported by three front-line leaders and 180 nurses in Southwestern Ontario, how leadership attributes impact the patient safety culture and patient safety outcomes was identified. Also identified within the core theory model, was the notion that leadership either directly (through emotions, actions/operations, outcomes impact, and perceptions) or indirectly (through influences) impacted the key categories that, in turn, influenced the construct of the nursing staff's 'identification of self'. Through the dynamic nature of the model, front-line leadership also had the ability to directly impact the nurse's 'identification of self'. The resultant

psychological and physical actions are what influenced the culture and patient outcomes of the department. In terms of the quantitative element of the study, both proposed hypotheses were confirmed. Further triangulation of data points supported the components within each key category, the impact of leadership attributes on this component, and the nurse's perceptions of the culture and patient safety outcomes.

This current study supports the hypotheses and relevant current literature in so far as concluding that front-line leadership does impact the presence of a patient safety culture and, as a result, can help prevent adverse events. As well, the integral parts of a learning organization (eg. systems thinking, personal mastery, mental models, team learning, and shared vision) can support the needs and abilities to provide this type of patient safety culture. Further, this study provides a deeper understanding of the specific impact by front-line leadership and therefore potential opportunities of interest in leadership development within this type of learning organization. Specifically, the potential usefulness and components of authentic leadership practice were fully supported by this research and area of study.

Authentic leadership practice has been identified within this exploratory case study as a potential framework for leadership practice that supports the premise of heightening both a patient safety culture and improved patient safety outcomes. As described by Gardner et al. (2005) and supported by this research, authentic leaders not only have to achieve authenticity themselves but as leaders they also “encompass authentic relations with followers and associates” (p.345). Within the definition of authentic leadership itself, this type of leadership supports the premise demonstrated by the study on the impact of leadership. Promotion of a positive psychological and external climate fostering self-development (Walumbwa et al., 2008) is identified in the context of the core theory model and statistical analysis. These influences are

vital for the confidence and enhancement of followers. In this current study, it was clear that authentic leadership attributes have the ability to impact the front-line nurses by promoting positive and ethically focused professional development. In turn, this large ‘core group’ of hospital employees then shape the culture of the work environment and provide the care to the patients in need.

In terms of the triangulation of data, it was identified that nurses/followers usually have an intrinsic need for acceptance, approval, and reassurance by their leadership. As well, most have genuine intentions to provide safe patient care or even to do so when they seem to be operating against all odds. It can be concluded, that followers embrace leadership which demonstrates attributes based on authentic leadership practice. Typically, nurses look for guidance and support to be “the best they can be” and, in turn, where possible they provide the care that is expected for each patient under their watch. Leadership’s intentions and actions impact the nurses’ abilities to develop themselves and provide the environment and care needed for patient safety. The importance of self-awareness of leadership in this study was made clear. Without this capacity being highly developed, it is difficult for leadership to understand these influences on the followers and their self-development. Without such awareness, unfortunate impacts will likely still be felt in the organization, as was apparent within this case study. In settings such as the site for this research, an absence of sufficient leadership awareness at least in part contributed to a culture of blame and potential gaps in safe patient care being created.

The findings in this study not only demonstrate the physical and psychological impact that front-line leadership can have on front-line nurses and, in turn, on patient safety culture and patient safety outcomes but also how this impact can materialize. Leadership’s attributes can impact emotions, actions, outcomes, perceptions, and influences. How the follower reacts to this

impact is based in part, on the attributes and inevitable leadership style that is present during delivery. In this case study of a hospital-based learning organization, it was demonstrated that the practice of authentic leadership can provide a potential framework for leadership to provide a positive impact on a number of levels. This impact element not only affects the nursing staff themselves but also the environment and processes of which they are a part. When it works well, the impact of such leadership strongly and favourably contributes to a patient safety culture the nurses work in and, provides a heightened opportunity to maintain or improve patient safety outcomes.

6.3 Recommendations for Future Studies

This case study was able to provide an in depth analysis of a department within a hospital that had formally identified itself as a learning organization. The staff in that unit were assumed to face similar daily struggles as those of other departments within the organization, and other public hospitals in Ontario. It was the researcher's hope that this study might provide data and insights to start a positive, safe, and respectful conversation on front-line leadership's impact and influence on the staff, the department, and patient safety. This study has advanced knowledge within this realm and underscored the potential value of leadership that can strengthen the opportunities for nurses to provide improved healthcare to patients. A final intention was to provide a useful framework for further studies where there is an interest in advancement of 'theory into practice' in such settings.

6.3.1 Ethics/Moral. Identified as having the lowest raw score amongst the leadership at the time of the field study and apparent in current literature as a difficult dimension to demonstrate for leaders, it may be useful for further studies to better understand this phenomenon. As well, understanding further the inhibiting factors, what can be difficult for

others to recognize and for leaders to enact due to eg. competing organizational priorities as well as leadership practices. Potential areas of interest for future research include the influence of values/beliefs, culture, senior leadership, and organizational influence on hospital-based leadership's ability to maintain this 'moral courage'.

6.3.2 Self-Awareness. The concept of self-awareness and leader versus follower perception of the attribute was an important area of inquiry identified in this study. Further studies could be focused on evaluating the reasons why there is seemingly a disconnect between leaders and followers perception of leader's self-awareness and the ways in which this can influence the care provided to patients and the work environment culture. As well, understanding how this potential gap in leader self-awareness influences the authentic development of the followers would be valuable. Put another way, a study about how might a highly self-aware leader in a hospital setting be able to influence authentic leadership in others may be useful.

Another area of potential inquiry lies in the ability of leaders to develop this self-awareness within a healthcare environment. In support of the difficulty of demonstrating ethical/moral attributes, and understanding of the relatively positive impact of authentic leadership practice on healthcare institutions, the question remains in light of ongoing financial constraints, how do we promote this type of practice; develop it within our leadership; and, sustain it?

6.3.3 Larger study. Based on these initial findings, it is of considerable interest to the researcher to further evaluate the research question of interest within a larger cohort of nurses. The researcher's interest pivots around the ability to use a mixed-methods study including statistical methods to further support and identify specific leadership characteristics,

organizational cultural components and outcomes and how they correlate. It would ideally provide potential models associated with these influences. To that end, a hospital setting with a large sample size of nurses and leaders in a longitudinal study is also of potential value.

6.4 Summary

Against a backdrop of budgetary restraints so far as funding of Canadian public hospitals and an ongoing quest for improved patient care, there is a need for this type of study to help identify contemporary leadership practices that not only promote but also inform patient safety culture and patient safety outcomes in a learning organization. With this new knowledge, leaders and indeed departments within this learning organization (and others organizations with similar interests) have the opportunity to consider and improve self-awareness, identify potential areas of leadership impact on their staff and patients, and continue their learning and understanding with the shared end goal of better patient outcomes.

Whilst this study has provided valuable data pertaining to leadership provided in that setting, it is important to note that the three employees who comprised the unit leadership were carrying out their duties in ways that complied with what their employer had requested of them. They did so in contexts over which the employer largely had control – including their workloads, reporting accountabilities, and priorities. Hence, it is important to understand this study in that light: In keeping with the principles of a learning organization, the findings and “lessons” from this research are best utilized conceptually rather than being reduced to the responsibility of particular employees who were involved in or referred to in the fieldwork element.

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Appendix A

Hospital Survey on Patient Safety

Instructions

This survey asks for your opinions about patient safety issues, medical error, and event reporting in your hospital and will take about 10 to 15 minutes to complete.

If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

An **“event”** is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.

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

SECTION A: Your Work Area/Unit

In this survey, think of your “unit” as the work area, department, or clinical area of the hospital where you spend most of your work time or provide most of your clinical services.

What is your primary work area or unit in this hospital? Select ONE answer.

- a. Many different hospital units/No specific unit
- b. Medicine (non-surgical)
- c. Surgery
- d. Obstetrics
- e. Pediatrics
- f. Emergency department
- g. Intensive care unit (any type)
- h. Psychiatry/mental health
- i. Rehabilitation
- j. Pharmacy
- k. Laboratory
- l. Radiology
- m. Anesthesiology
- n. Other, please specify:

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

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	▼	▼	▼	▼	▼
Think about your hospital work area/unit...					
1. People support one another in this unit	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

- 2. We have enough staff to handle the workload..... ₁ ₂ ₃ ₄ ₅
- 3. When a lot of work needs to be done quickly, we work together as a team to get the work done ₁ ₂ ₃ ₄ ₅
- 4. In this unit, people treat each other with respect ₁ ₂ ₃ ₄ ₅
- 5. Staff in this unit work longer hours than is best for patient care ₁ ₂ ₃ ₄ ₅

SECTION A: Your Work Area/Unit (continued)

- | Think about your hospital work area/unit... | Strongly Disagree
▼ | Disagree
▼ | Neither
▼ | Agree
▼ | Strongly Agree
▼ |
|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 6. We are actively doing things to improve patient safety | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 7. We use more agency/temporary staff than is best for patient care | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 8. Staff feel like their mistakes are held against them | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 9. Mistakes have led to positive changes here | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 10. It is just by chance that more serious mistakes don't happen around here | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 11. When one area in this unit gets really busy, others help out | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 12. When an event is reported, it feels like the person is being written up, not the problem | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 13. After we make changes to improve patient safety, we evaluate their effectiveness | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 14. We work in "crisis mode" trying to do too much, too quickly | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 15. Patient safety is never sacrificed to get more work done | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 16. Staff worry that mistakes they make are kept in their personnel file | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 17. We have patient safety problems in this unit | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 18. Our procedures and systems are good at preventing errors from happening | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |

SECTION B: Your Supervisor/Manager

Please indicate your agreement or disagreement with the following statements about your immediate supervisor/manager or person to whom you directly report.

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
2. My supervisor/manager seriously considers staff suggestions for improving patient safety	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
3. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
4. My supervisor/manager overlooks patient safety problems that happen over and over	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

SECTION C: Communications

How often do the following things happen in your work area/unit?

	Never ▼	Rarely ▼	Some- times ▼	Most of the time ▼	Always ▼
Think about your hospital work area/unit...					
1. We are given feedback about changes put into place based on event reports	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
2. Staff will freely speak up if they see something that may negatively affect patient care	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
3. We are informed about errors that happen in this unit	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
4. Staff feel free to question the decisions or actions of those with more authority	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
5. In this unit, we discuss ways to prevent errors from happening again ..	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
6. Staff are afraid to ask questions when something does not seem right	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

SECTION D: Frequency of Events Reported

In your hospital work area/unit, when the following mistakes happen, *how often are they reported?*

	Never ▼	Rarely ▼	Some- times ▼	Most of the time ▼	Always ▼
1. When a mistake is made, but is <u>caught and corrected before affecting the patient</u> , how often is this reported?	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
2. When a mistake is made, but has <u>no potential to harm the patient</u> , how often is this reported?	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
3. When a mistake is made that <u>could harm the patient</u> , but does not, how often is this reported?	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

SECTION E: Patient Safety Grade

Please give your work area/unit in this hospital an overall grade on patient safety.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	B	C	D	E
Excellent	Very Good	Acceptable	Poor	Failing

SECTION F: Your Hospital

Please indicate your agreement or disagreement with the following statements about your hospital.

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
Think about your hospital...					
1. Hospital management provides a work climate that promotes patient safety.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
2. Hospital units do not coordinate well with each other.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
3. Things “fall between the cracks” when transferring patients from one unit to another	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
4. There is good cooperation among hospital units that need to work together	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

SECTION F: Your Hospital (continued)

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
Think about your hospital...					
5. Important patient care information is often lost during shift changes	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
6. It is often unpleasant to work with staff from other hospital units	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
7. Problems often occur in the exchange of information across hospital units	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
8. The actions of hospital management show that patient safety is a top priority	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
9. Hospital management seems interested in patient safety only after an adverse event happens.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
10. Hospital units work well together to provide the best care for patients	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
11. Shift changes are problematic for patients in this hospital.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

SECTION G: Number of Events Reported

In the past 12 months, how many event reports have you filled out and submitted?

- a. No event reports d. 6 to 10 event reports
- b. 1 to 2 event reports e. 11 to 20 event reports
- c. 3 to 5 event reports f. 21 event reports or more

SECTION H: Background Information

This information will help in the analysis of the survey results.

1. How long have you worked in this hospital?

- a. Less than 1 year d. 11 to 15 years
- b. 1 to 5 years e. 16 to 20 years
- c. 6 to 10 years f. 21 years or more

2. How long have you worked in your current hospital work area/unit?

- a. Less than 1 year d. 11 to 15 years
- b. 1 to 5 years e. 16 to 20 years
- c. 6 to 10 years f. 21 years or more

3. Typically, how many hours per week do you work in this hospital?

- a. Less than 20 hours per week d. 60 to 79 hours per week
- b. 20 to 39 hours per week e. 80 to 99 hours per week
- c. 40 to 59 hours per week f. 100 hours per week or more

SECTION H: Background Information (continued)

4. What is your staff position in this hospital? Select ONE answer that best describes your staff position.

- a. Registered Nurse j. Respiratory Therapist
- b. Physician Assistant/Nurse Practitioner k. Physical, Occupational, or Speech Therapist
- c. LVN/LPN l. Technician (e.g., EKG, Lab, Radiology)
- d. Patient Care Asst/Hospital Aide/Care Partner m. Administration/Management
- e. Attending/Staff Physician n. Other, please specify:
- f. Resident Physician/Physician in Training
-

-
- g. Pharmacist
 - h. Dietician
 - i. Unit Assistant/Clerk/Secretary

5. In your staff position, do you typically have direct interaction or contact with patients?

- a. YES, I typically have direct interaction or contact with patients.
- b. NO, I typically do NOT have direct interaction or contact with patients.

6. How long have you worked in your current specialty or profession?

- a. Less than 1 year
- b. 1 to 5 years
- c. 6 to 10 years
- d. 11 to 15 years
- e. 16 to 20 years
- f. 21 years or more

SECTION I: Your Comments

Please feel free to write any comments about patient safety, error, or event reporting in your hospital.

THANK YOU FOR COMPLETING THIS SURVEY.

Appendix B

Authentic Leadership Questionnaire Permission Letter

For use by Lara Murphy only. Received from Mind Garden, Inc. on April 13, 2015



To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her thesis or dissertation research:

Instrument: *Authentic Leadership Questionnaire*

Authors: *Bruce J. Avolio, William L. Gardner, & Fred O. Walumbwa*

Copyright: *2007 by Bruce J. Avolio, William L. Gardner, & Fred O. Walumbwa*

Three sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,



Appendix C

Western University Ethics Review Board Approval



Western
Research

Research Ethics

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

Principal Investigator: Dr. Pamela Bishop
Department & Institution: Education, Western University

NMREB File Number: 106922
Study Title: Leadership Attributes Impact on Patient Safety Culture and Patient Safety Outcomes in a Learning Organization
Sponsor:

NMREB Initial Approval Date: August 21, 2015
NMREB Expiry Date: August 21, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Instruments	Hospital Survey on Patient Safety	2015/06/08
Instruments	Authentic Leadership Questionnaire Example	2015/06/08
Other	References	2015/06/08
Recruitment Items	Follow up e-mail to nursing staff	2015/06/26
Instruments	Interview Protocol	2015/06/26
Revised Western University Protocol		2015/07/31
Recruitment Items	E-Mail Follow up to Leadership	2015/07/31
Recruitment Items	E-Mail Follow up to Nursing	2015/07/31
Recruitment Items	E-Mail for Leadership Recruitment	2015/07/31
Recruitment Items	E-Mail for Nursing Recruitment	2015/07/31
Recruitment Items	E-Mail follow up for Interested Leadership	2015/07/31
Recruitment Items	E-Mail follow up for Interested Nursing	2015/07/31
Revised Letter of Information & Consent		2015/07/31
ISO		

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

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

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB 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.



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

Appendix D

Emails Scripts to Participants

Email Script for Recruitment to Nursing Staff

Subject Line: Invitation to participate in research

You are being invited to participate in a study that we, Dr. Lara Murphy and Dr. Pam Bishop, are conducting. Briefly, the study was designed to explore the impact leadership attributes have on patient safety culture and patient outcomes in a learning organization. Specifically, we are studying nursing staff and leadership from the Adult Emergency Department.

If you choose to participate you will be asked to complete an online survey on patient safety that will take approximately 15 minutes to complete. The survey results are completely anonymous. As a small token of gratitude for completing the survey you will receive an electronic gift card.

If you are interested in participating further, the second part of the study involves a small number of individuals participating in a 60 minute interview. This will take place at your convenience. As a token of gratitude for completion of the interview you will be given a second gift card.

If you would like to participate in the preliminary component of the study please click on the link below to access the Letter of Information and survey link.

If you are interested in participating in the interview process or have any further questions please contact Lara Murphy.

Thank you.

Email Script for Recruitment to Leadership

Subject Line: Invitation to participate in research

You are being invited to participate in a study that we, Dr. Lara Murphy and Dr. Pam Bishop, are conducting. Briefly, the study was designed to explore the impact leadership attributes have on patient safety culture and patient outcomes in a learning organization. Specifically, we are studying nursing staff and leadership from the Adult Emergency Department.

If you choose to participate you will be asked to complete an online survey on leadership practices that will take approximately 15 minutes to complete. The survey results are completely anonymous. As a small token of gratitude for completing the survey you will receive an electronic gift card.

If you would like to participate in the study please click on the link below to access the Letter of Information and survey link.

Thank you.

Email Script for Follow Up to Nursing Staff:

Subject Line: Follow up Research Participant Opportunity

We would like to thank everyone who has already participated in our study and completed the survey online. If you have not done so already and would still like to participate please click on the link below to access the Letter of Information and survey link.

If you have completed the survey and would like to participate further in the study as an interview participant please review the Letter of Information and contact Lara Murphy.

Thank you again.

Email Script for Follow Up to Leadership:

Subject Line: Follow up Research Participant Opportunity

We would like to thank everyone who has already participated in our study and completed the survey online. If you have not done so already and would still like to participate please click on the link below to access the Letter of Information and survey link.

If you have any further questions please contact Lara Murphy.

Thank you again.

Appendix E

Letter of Information



Project Title: Leadership Attributes Impact on a Patient Safety Culture and Patient Safety Outcomes in a Learning Organization

Principal Investigator: Dr. Pam Bishop, Faculty of Education, Western University

Student: Dr. Lara Murphy, Western University

Letter of Information

1. Invitation to Participate

You are being invited to participate in this research study on leadership attributes and their impact on patient safety culture and patient safety outcomes because you are in the nursing profession and/or leadership position and currently working in the emergency medicine unit undergoing this study.

2. Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. Purpose of this Study

The purpose of this study is to obtain a deeper understanding on how and why leadership attributes impact patient safety culture and patient safety outcomes in a learning organization. It is specifically looking into how leaders influence their followers.

4. Inclusion Criteria

Individuals who are in the nursing profession and/or leadership position and are currently employed by [REDACTED] Emergency Department [REDACTED] eligible to participate in this study.

5. Exclusion Criteria

Individuals who are not within the nursing profession and/or leadership position, not hired by [REDACTED] in the Adult Emergency Department [REDACTED]



6. Study Procedures

If you agree to participate, you will be asked to participate in one of two online surveys based on your position. You may also be asked to participate in an interview. It is anticipated that the entire task will take 75 mins, over 2 sessions. The online survey can be completed at your convenience and the interview will be conducted at [REDACTED] an allocated date and time decided between the researcher and participant. There will be up to a total of 190 nurses asked to participate in the survey portion and 5 nurses participating in the interview. Following the interview process you will be offered the opportunity to review and edit the transcript prior to data analysis. This will be provided to you through your personal email or through registered mail to your home address to maintain anonymity.

7. Possible Risks and Harms

There are no known or anticipated risks or discomforts associated with participating in this study.

8. Possible Benefits

You may not directly benefit from participating in this study but information gathered may provide benefits to society as a whole which include: a deeper understanding of the influence of leadership and their attributes on patient safety culture and patient outcomes, possible framework for struggling healthcare units or other learning organizations, transfer of knowledge which can lead to improved patient care, organizational culture, and advancement in research.

9. Compensation

As a small token of gratitude for the time taken to participate in the online survey you will be compensated with a \$5 electronic Starbucks gift card. If you agree to participate in the interview portion you will be compensated with a \$10 Tim Hortons gift card for your time.

10. Voluntary Participation

Participation in the study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future employment. As well you may choose not to be audio recorded for the interview component in which detailed notes will be taken instead by the interviewer.



11. Confidentiality

All data collected will remain confidential and accessible only to the investigators of this study. If the results are published, your name and the organization's name will not be used. If you choose to participate in the interview process and then withdraw from the study, your data from the interview will be removed and destroyed from our database. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact [REDACTED]

If you have any questions about your rights as a research participant or the conduct of this study, you may contact [REDACTED] Institute [REDACTED]

13. Publication

If the results of the study are published, your name will not be used. If you would like to receive a copy of any potential study results, please provide your name and home address on a piece of paper separate from the consent form.

14. Consent

Alternate Method of Consent

Completion of the survey is indication of your consent to participate.

Written Consent

A consent form will be given to you to complete if you agree to participate in the interview section of this study.

This letter is yours to keep for future reference.



Consent Form

Project Title: Leadership Attributes Impact on a Patient Safety Culture and Patient Outcomes in a Learning Organization

Study Investigator's Name: Dr. Pam Bishop, Dr. Lara Murphy

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

- I consent to participation and audio recording of the interview.

- I consent to participation of the interview but I do not consent to audio recording of the interview.

Participant's Name (please print): _____

Participant's Signature: _____

Date: _____

Person Obtaining Informed Consent (please print): _____

Signature: _____

Date: _____

Appendix F

Table 8

Correlations of Patient Safety Culture Items

	CultA1	CultA2	CultA3	CultA4	CultA5	CultA6	CultA7	CultA8	CultA9	CultA10
CultA1										
CultA2	0.53									
CultA3	0.66	0.40								
CultA4	0.48	0.16	0.97							
CultA5	0.10	0.08	-0.12	-0.03						
CultA6	0.23	0.48	0.24	0.19	0.35					
CultA7	0.49	0.06	0.26	0.31	0.09	0.28				
CultA8	0.37	0.41	0.32	0.42	0.10	0.38	0.48			
CultA9	0.19	0.45	0.29	0.26	-0.03	0.59	0.29	0.54		
CultA10	0.39	0.04	0.26	0.33	0.24	0.28	0.42	0.49	0.31	
CultA11	0.73	0.26	0.74	0.48	0.12	0.22	0.33	0.31	0.17	0.28
CultA12	0.29	0.25	0.13	0.29	0.35	0.41	0.62	0.62	0.39	0.52
CultA13	0.23	0.42	0.38	0.13	0.11	0.68	0.18	0.38	0.76	0.46
CultA14	0.26	0.38	0.12	0.25	0.51	0.32	0.02	0.17	-0.05	0.38
CultA15	0.26	0.30	-0.07	0.37	0.14	0.51	0.14	0.48	0.28	-0.04
CultA16	0.51	0.30	0.41	0.44	0.20	0.25	0.33	0.62	0.28	0.37
CultA17	0.37	0.38	0.33	0.42	0.44	0.60	0.21	0.57	0.49	0.60
CultA18	0.65	0.47	0.48	0.26	-0.05	0.51	0.22	0.53	0.57	0.45
CultC1	0.22	0.37	0.40	0.08	0.18	0.23	0.11	0.39	0.47	0.20
CultC2	0.18	0.33	0.34	0.49	0.21	0.32	0.13	0.48	0.28	0.44
CultC3	0.19	0.37	0.20	0.07	0.01	0.46	0.18	0.26	0.21	0.20
CultC4	0.45	0.33	0.53	0.49	-0.18	0.39	0.20	0.44	0.35	0.44
CultC5	0.33	0.57	0.23	0.09	0.08	0.49	0.47	0.41	0.49	0.23
CultC6	0.45	0.29	0.59	0.56	0.07	0.49	0.46	0.53	0.47	0.53
CultF2	0.32	0.45	0.24	0.26	0.22	0.50	0.39	0.52	0.31	0.17
CultF3	0.42	0.16	0.22	0.33	0.09	0.12	0.31	0.30	0.04	0.41
CultF4	0.19	0.41	0.34	0.39	0.36	0.63	0.10	0.39	0.34	0.16
CultF5	0.18	-0.06	0.29	0.23	0.13	0.18	0.20	0.24	0.06	0.19
CultF6	0.10	0.14	0.15	0.29	0.33	0.48	0.30	0.25	0.15	0.41
CultF7	0.28	0.29	0.26	0.22	0.35	0.42	0.13	0.21	0.31	0.35
CultF10	0.22	0.14	0.16	0.39	0.27	0.27	0.15	0.33	-0.17	0.48
CultF11	0.17	-0.15	0.14	0.20	-0.08	0.02	0.13	-0.02	0.05	0.15

(continued)

(continued)

	CultA11	CultA12	CultA13	CultA14	CultA15	CultA16	CultA17	CultA18	CultC1	CultC2
CultA1										
CultA2										
CultA3										
CultA4										
CultA5										
CultA6										
CultA7										
CultA8										
CultA9										
CultA10										
CultA11										
CultA12	0.23									
CultA13	0.31	0.20								
CultA14	0.09	0.23	0.22							
CultA15	0.04	0.43	0.03	0.04						
CultA16	0.26	0.68	0.14	0.43	0.45					
CultA17	0.27	0.55	0.57	0.36	0.37	0.47				
CultA18	0.33	0.27	0.56	0.20	0.24	0.42	0.41			
CultC1	0.33	0.37	0.44	0.16	0.18	0.50	0.47	0.40		
CultC2	0.12	0.56	0.24	0.43	0.03	0.51	0.32	0.31	0.18	
CultC3	0.21	0.41	0.34	0.25	0.16	0.43	0.36	0.50	0.49	0.33
CultC4	0.39	0.33	0.35	0.32	0.23	0.51	0.25	0.52	0.38	0.56
CultC5	0.33	0.53	0.49	0.28	0.18	0.48	0.50	0.48	0.66	0.51
CultC6	0.49	0.37	0.54	0.40	0.22	0.44	0.56	0.55	0.40	0.43
CultF2	0.35	0.47	0.27	0.27	0.57	0.40	0.53	0.18	0.27	0.15
CultF3	0.13	0.36	-0.09	0.24	0.30	0.45	0.23	0.36	0.38	0.25
CultF4	0.27	0.36	0.29	0.40	0.43	0.46	0.52	0.15	0.24	0.44
CultF5	0.07	0.20	0.09	0.05	0.15	0.38	0.23	0.18	0.42	0.29
CultF6	0.07	0.46	0.27	0.64	0.26	0.55	0.35	0.28	0.42	0.48
CultF7	0.27	0.39	0.18	0.39	0.23	0.45	0.41	0.28	0.51	0.43
CultF10	0.48	0.37	0.03	0.35	0.17	0.24	0.36	-0.04	0.09	0.47
CultF11	-0.05	0.06	-0.01	-0.02	-0.07	0.12	0.08	0.20	0.18	0.14

(continued)

(continued)

	CultC3	CultC4	CultC5	CultC6	CultF2	CultF3	CultF4	CultF5	CultF6	CultF7	CultF10	CultF11
CultA1												
CultA2												
CultA3												
CultA4												
CultA5												
CultA6												
CultA7												
CultA8												
CultA9												
CultA10												
CultA11												
CultA12												
CultA13												
CultA14												
CulaA15												
CultA16												
CultA17												
CultA18												
CultC1												
CultC2												
CultC3												
CultC4	0.62											
CultC5	0.77	0.53										
CultC6	0.64	0.73	0.57									
CultF2	0.29	0.42	0.51	0.57								
CultF3	0.24	0.26	0.36	0.19	0.36							
CultF4	0.22	0.38	0.30	0.46	0.77	0.32						
CultF5	0.09	0.21	0.29	0.37	0.26	0.71	0.40					
CultF6	0.49	0.40	0.53	0.51	0.45	0.53	0.48	0.48				
CultF7	0.33	0.39	0.47	0.54	0.52	0.61	0.64	0.69	0.67			
CultF10	0.18	0.40	0.12	0.29	0.37	0.38	0.52	0.13	0.36	0.44		
CultF11	0.03	0.21	0.16	0.25	0.11	0.58	0.32	0.76	0.36	0.69	0.14	

Table 9
Patient Safety Culture Items p values

	CultA1	CultA2	CultA3	CultA4	CultA5	CultA6	CultA7	CultA8	CultA9	CultA10
CultA1										
CultA2	<.001									
CultA3	<.001	<.05								
CultA4	<.001	0.356	<.001							
CultA5	.509	0.58	0.393	0.859						
CultA6	.166	<.001	0.145	0.217	<.05					
CultA7	<.05	0.748	0.202	0.221	0.553	<.05				
CultA8	<.05	<.05	<.05	<.05	0.462	<.05	<.05			
CultA9	.204	<.05	0.061	<.05	0.871	<.001	0.08	<.001		
CultA10	<.05	0.79	0.126	0.054	0.13	<.05	<.05	<.001	<.001	
CultA11	<.001	0.08	<.001	<.001	0.348	0.1	0.1	<.05	0.166	0.119
CultA12	<.001	0.178	0.447	0.075	<.05	<.05	<.001	<.001	<.05	<.001
CultA13	0.178	<.05	<.05	0.457	0.541	<.001	0.23	<.05	<.001	<.001
CultA14	.11	<.05	0.511	0.235	<.001	0.07	0.88	0.326	0.817	<.05
CultA15	.123	<.05	0.739	<.05	0.365	<.001	0.351	<.05	0.114	0.812
CultA16	<.001	<.05	<.05	<.05	0.15	0.07	<.05	<.001	0.065	<.05
CultA17	<.05	<.05	<.05	<.05	<.001	<.001	0.19	<.001	<.001	<.001
CultA18	<.001	<.001	<.05	0.123	0.7	<.05	0.14	<.05	<.001	<.001
CultC1	0.233	<.05	<.05	0.604	0.272	0.15	0.49	<.05	<.001	0.138
CultC2	0.244	0.071	<.05	<.001	0.159	<.05	0.44	<.001	0.061	<.001
CultC3	0.237	<.05	0.269	0.682	0.977	<.05	0.38	0.2	0.213	0.105
CultC4	<.001	<.05	<.01	<.001	0.133	<.05	0.37	<.05	<.05	<.05
CultC5	0.039	<.001	0.22	0.573	0.638	<.001	<.05	<.05	<.001	0.05
CultC6	<.001	0.055	<.001	<.001	0.572	<.001	<.05	<.001	<.05	<.001
CultF2	<.05	<.001	0.169	0.178	0.08	<.001	<.05	<.001	<.05	0.261
CultF3	<.05	0.364	0.22	0.109	0.578	0.45	<.05	0.105	0.804	<.05
CultF4	0.212	<.05	<.05	<.05	<.05	<.001	0.6	<.05	<.05	0.323
CultF5	0.442	0.747	0.146	0.344	0.479	0.21	0.138	0.197	0.761	0.338
CultF6	0.532	0.373	0.376	0.096	0.086	<.001	<.05	0.095	0.358	<.05
CultF7	0.182	0.10	0.143	0.315	<.05	<.001	0.429	0.144	0.11	0.083
CultF10	0.214	0.383	0.353	<.05	0.072	<.05	0.371	<.05	0.273	<.001
CultF11	0.413	0.387	0.513	0.413	0.668	0.9	0.421	0.911	0.816	0.437

(continued)

(continued)

	CultA11	CultA12	CultA13	CultA14	CultA15	CultA16	CultA17	CultA18	CultC1	CultC2
CultA1										
CultA2										
CultA3										
CultA4										
CultA5										
CultA6										
CultA7										
CultA8										
CultA9										
CultA10										
CultA11										
CultA12	0.158									
CultA13	<.05	0.212								
CultA14	0.578	0.098	0.237							
CultA15	0.803	<.05	0.869	0.829						
CultA16	0.067	<.001	0.357	<.05	<.001					
CultA17	0.097	0.001	<.001	<.05	<.05	<.001				
CultA18	<.05	0.095	<.001	0.231	0.104	<.05	<.05			
CultC1	<.05	<.05	<.001	0.373	0.262	<.05	<.05	<.05		
CultC2	0.48	<.001	0.09	<.05	0.857	<.001	<.05	0.059	0.261	
CultC3	0.113	<.05	<.05	0.221	0.317	<.05	<.05	<.001	<.001	0.063
CultC4	<.05	<.05	<.05	<.05	0.121	<.001	0.143	<.001	<.05	<.001
CultC5	<.05	<.05	<.001	0.124	0.242	<.001	<.001	<.001	<.001	<.001
CultC6	<.001	<.05	<.001	<.05	0.143	<.001	<.001	<.001	<.05	<.05
CultF2	<.05	<.05	<.05	0.065	<.001	<.05	<.001	0.228	<.05	0.377
CultF3	0.502	<.05	0.565	0.163	0.058	<.05	0.18	<.05	<.05	0.119
CultF4	0.086	<.05	0.069	<.05	<.05	<.001	<.001	0.354	0.244	<.001
CultF5	0.761	0.268	0.621	0.788	0.399	<.05	0.124	0.279	<.05	0.125
CultF6	0.722	<.001	0.126	<.001	0.195	<.001	<.05	0.056	<.001	<.001
CultF7	0.125	<.05	0.25	<.05	0.114	<.001	<.05	0.157	<.001	<.001
CultF10	<.001	<.05	0.849	<.05	0.201	0.112	<.05	0.822	0.518	<.001
CultF11	0.83	0.745	0.977	0.903	0.605	0.52	0.623	0.253	0.351	0.454

(continued)

(continued)

	CultC3	CultC4	CultC5	CultC6	CultF2	CultF3	CultF4	CultF5	CultF6	CultF7	CultF10	CultF11
CultA1												
CultA2												
CultA3												
CultA4												
CultA5												
CultA6												
CultA7												
CultA8												
CultA9												
CultA10												
CultA11												
CultA12												
CultA13												
CultA14												
CultA15												
CultA16												
CultA17												
CultA18												
CultC1												
CultC2												
CultC3												
CultC4	<.001											
CultC5	<.001	<.001										
CultC6	<.001	<.001	<.001									
CultF2	0.082	<.05	<.001	<.001								
CultF3	0.173	0.145	<.05	0.358	<.05							
CultF4	0.243	<.05	0.082	<.001	<.001	<.05						
CultF5	0.636	0.259	0.118	<.05	0.146	<.001	<.05					
CultF6	<.05	<.05	<.001	<.001	<.05	<.001	<.05	<.001				
CultF7	0.121	<.05	<.05	<.001	<.001	<.001	<.001	<.001	<0.001			
CultF10	0.18	<.05	0.381	0.06	<.001	<.05	<.001	0.507	<.05	<.05		
CultF11	0.91	0.167	0.436	0.17	0.521	<.001	<.05	<.001	<.05	<.001	0.439	

Table 10
Patient Safety Culture Items Post-hoc Power Values

	CultA1	CultA2	CultA3	CultA4	CultA5	CultA6	CultA7	CultA8	CultA9	CultA10
CultA1										
CultA2	1									
CultA3	1	1								
CultA4	1	0.83	1							
CultA5	0.62	0.53	0.72	0.21						
CultA6	0.96	1	0.97	0.91	1					
CultA7	1	0.43	0.98	1	0.58	0.99				
CultA8	1	1	1	1	0.63	1	1			
CultA9	0.91	1	0.99	0.98	0.22	1	0.99	1		
CultA10	1	0.29	0.98	1	0.97	0.99	1	1	1	
CultA11	1	0.98	1	1	0.72	0.95	1	1	0.87	0.99
CultA12	0.99	0.97	0.76	0.99	1	1	1	1	1	1
CultA13	0.95	1	1	0.73	0.67	1	0.89	1	1	1
CultA14	0.98	1	0.72	0.98	1	1	0.18	0.87	0.32	1
CultA15	0.98	0.99	0.43	1	0.77	1	0.77	1	0.99	0.28
CultA16	1	0.99	1	1	0.92	0.98	1	1	0.99	1
CultA17	1	1	1	1	1	1	0.93	1	1	1
CultA18	1	1	1	0.98	0.37	1	0.95	1	1	1
CultC1	0.95	1	1	0.53	0.88	0.96	0.68	1	1	0.92
CultC2	0.90	1	1	1	0.94	1	0.74	1	0.99	1
CultC3	0.91	1	0.93	0.47	0.67	1	0.88	0.98	0.94	0.93
CultC4	1	1	1	1	0.89	1	0.93	0.98	1	1
CultC5	1	1	0.96	0.59	0.52	1	1	1	1	0.96
CultC6	1	0.99	1	1	0.48	1	1	0.99	1	1
CultF2	1	1	0.96	0.98	0.95	1	1	1	1	0.87
CultF3	1	0.84	0.95	1	0.56	0.71	1	0.99	0.29	1
CultF4	0.91	1	1	1	1	1	0.61	1	1	0.83
CultF5	0.89	0.40	0.99	0.96	0.73	0.89	0.93	0.97	0.39	0.90
CultF6	0.62	0.78	0.82	0.99	1	1	0.99	0.98	0.80	1
CultF7	0.99	0.99	0.98	0.95	1	1	0.75	0.94	0.99	1
CultF10	0.94	0.77	0.83	1	0.99	0.98	0.82	1	0.87	1
CultF11	0.87	0.83	0.78	0.93	0.51	0.17	0.74	0.16	0.34	0.81

(continued)

(continued)

	CultA11	CultA12	CultA13	CultA14	CultA15	CultA16	CultA17	CultA18	CultC1	CultC2
CultA1										
CultA2										
CultA3										
CultA4										
CultA5										
CultA6										
CultA7										
CultA8										
CultA9										
CultA10										
CultA11										
CultA12	0.96									
CultA13	0.99	0.93								
CultA14	0.59	0.96	0.94							
CultA15	0.25	1	0.21	0.25						
CultA16	0.98	1	0.78	1	1					
CultA17	0.98	1	1	1	1	1				
CultA18	1	0.98	1	0.92	0.97	1	1			
CultC1	1	1	1	0.85	0.89	1	1	1		
CultC2	0.69	1	0.96	1	0.20	1	1	1	0.89	
CultC3	0.94	1	1	0.97	0.85	1	1	1	1	1
CultC4	1	1	1	1	0.96	1	0.97	1	1	1
CultC5	1	1	1	0.99	0.89	1	1	1	1	1
CultC6	1	1	1	1	0.95	1	1	1	1	1
CultF2	1	1	0.98	0.99	1	1	1	0.89	0.98	0.82
CultF3	0.75	1	0.58	0.96	0.99	1	0.95	1	1	0.97
CultF4	0.99	1	0.99	1	1	1	1	0.82	0.97	1
CultF5	0.45	0.93	0.56	0.34	0.80	1	0.96	0.90	1	0.99
CultF6	0.46	1	0.98	1	0.98	1	1	0.99	1	1
CultF7	0.98	1	0.88	1	0.96	1	1	0.99	1	1
CultF10	1	1	0.19	1	0.85	0.96	1	0.27	0.59	1
CultF11	0.32	0.43	0.07	0.15	0.48	0.70	0.54	0.93	0.89	0.78

(continued)

(continued)

	CultC3	CultC4	CultC5	CultC6	CultF2	CultF3	CultF4	CultF5	CultF6	CultF7	CultF10	CultF11
CultA1												
CultA2												
CultA3												
CultA4												
CultA5												
CultA6												
CultA7												
CultA8												
CultA9												
CultA10												
CultA11												
CultA12												
CultA13												
CultA14												
CultA15												
CultA16												
CultA17												
CultA18												
CultC1												
CultC2												
CultC3												
CultC4	1											
CultC5	1	1										
CultC6	1	1	1									
CultF2	0.99	1	1	1								
CultF3	0.97	0.98	1	0.91	1							
CultF4	0.94	1	0.99	1	1	1						
CultF5	0.58	0.94	0.99	1	0.98	1	1					
CultF6	1	1	1	1	1	1	1	1				
CultF7	1	1	1	1	1	1	1	1	1			
CultF10	0.88	1	0.71	0.99	1	1	1	0.75	1	1		
CultF11	0.19	0.94	0.85	0.98	0.68	1	1	1	1	1	0.78	

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- Acting, Manager Training and Development, Nursing and Allied Health
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