The relationship between engagement and charge nurse manager leadership, the leadership relationship, practice environment, and patient outcomes.

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A thesis submitted to

Auckland University of Technology

in partial fulfillment of the requirements for the degree

of

Doctor of Health Sciences (DHSc)

July 2018

School of Health Care Practice

Faculty of Health & Environmental Sciences

Dedication

Julia, without you this would never have occurred.

It was your idea to do this; and when I doubted I could do it, finish it, understand it,

you were there, encouraging me all the way.

I appreciate your faith in me and your enduring patience

more than you will ever know.

I also appreciate all the practical support you have provided me.

Thank you for doing all the washing, ironing, dog walking, cooking and gardening.

You are my inspiration.

Abstract

Aim. To explore the effects of leadership style, unit level supervisor/subordinate relationships, and perceived organisational support on engagement and unit level patient outcomes.

Background. Senior managers are under pressure to pursue high-quality, patient-focused care and seek opportunities to intervene and improve care delivery. As nursing's contribution to quality gains international importance, a body of research that focuses on the relationship between staff engagement and patient outcomes is emerging. Schaufeli et al.'s (2004) definition of work engagement provides a frame for investigation in that it provides a "positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p. 295). Much of the literature investigating the drivers and impacts of engagement has focused on the impact on staff. There is a gap in the research that investigates the relationship between engagement and resonant leadership, the quality of leader-member relationships, perceived organisational support and patient outcomes.

The research takes an objective epistemological position by hypothesising that leadership style, quality of relationships, and perception of support impact both nurse engagement and patient outcomes. Exploration of the relationships among the constructs is consistent with Social Exchange Theory, where interactions lead to obligations, which are interdependent and contingent on one another. A post-positivist perspective, in this context, reflects the objective existence of meaningful reality and that outcomes of research are not certain or totally objective.

Method. The research involved a cross sectional survey at an urban District Health Board among a population of 956 nursing and clerical staff contributing to unit level quality outcomes on 20 medical/surgical inpatient wards, and unit level institutional nurse-sensitive outcome data. Exploratory and confirmatory analysis was undertaken prior to assessing the measurement model for goodness-of-fit and discriminant and convergent validity. Tests for common-method bias were undertaken, and the data were tested using structural equation modeling. Path and mediation analyses were undertaken.

Results. The primary hypothesis that engagement mediates the positive relationship between resonant leadership, exchange relationships, organisational support, and perceptions

of unit care quality, and the negative relationships with patient outcomes (falls) and patient experience (Friends and Family Test) was supported. Three further mediated paths were identified which bypassed engagement. Nine direct path hypotheses were also supported.

Discussion. Five key findings were identified: (i) the primary hypothesis was supported, (ii) resonant leadership is confirmed as the starting point for improving patient outcomes and patient satisfaction, (iii) all indirect paths were mediated by perceptions of unit care quality and falls rates, (iv) social exchanges are evident as perceptions of unit care quality is a core element of all indirect paths, and (v) both perceived organisation support and leader-member exchange are confirmed as antecedents of engagement when investigating institutionally collected 'falls' and 'friends and family test' nurse-sensitive indicators. The exploratory nature of the research using available institutional nurse-sensitive indicator data for pressure injuries, complaints, and fundamentals of care resulted in hypotheses related to these three indicators not being supported.

Conclusion. The research demonstrated that resonant leadership is a relational leadership style, which is positively associated with staff and patient experience, and patient outcomes. A real world problem for nurse leaders was investigated, that is, to identify modifiable factors to improve quality outcomes. As a result, the findings have significance for being able to improve how people feel about the experience of their care, as well as the ability to improve the safety of care.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institute of higher learning.

Signed _____ Dated 7 November 2018

Jennifer Margaret Parr

Acknowledgments

This research could not have been completed without the support of a number of people and organisations over the past few years and throughout my career.

Leadership and engagement of nurses and their teams and the impact on patient outcomes. Thank you also to Dr Helen Wihongi, research Advisor – Māori for your support and advice and Māori review of my research proposal.

Shoba Nayar, thank you for proof reading my thesis.

I would like to acknowledge Dr David Foster, probably the first academic nurse I encountered. You stimulated my interest in nursing leadership, encouraged me to aspire to an executive role, and have always provided me with advice, support, and encouragement. Thank you, David.

Finally, I would like to thank my mother and father, Wyn and Eric Parr. You both have shaped me into the person I am today. For some reason I think I can achieve anything. Thank you.

Chapter 1: Introduction to the Research

During my journey through healthcare professional and management roles, I have noticed varying staff responses to different leadership styles that appear to result in varying levels of staff engagement, and varying degrees of delivery of quality care. At an organisational level this observation has been confirmed by West and Dawson (2012). Researchers are beginning to examine the relationships between the quality of the leader-member relationship, perceived organisational support, and engagement (Brunetto, Shacklock, Teo, & Farr-Wharton, 2014; Shacklock, Brunetto, Teo, & Farr-Wharton, 2013). There is an opportunity to undertake a unique investigation into the relationships between these constructs, with some evidence to suggest that there might be significant positive relationships to patient outcomes. The aim of this research, therefore, is to explore the relationships between leadership style, unit level leader-member relationships, and perceived organisational support, on engagement and unit level patient outcomes at a metropolitan District Health Board (DHB) in New Zealand (see Figure 1).
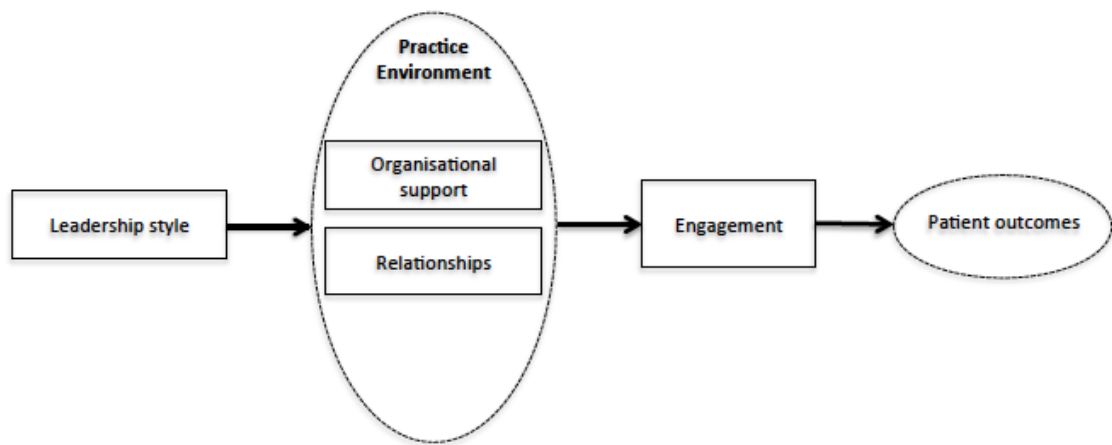
Figure 1. Model to explore the relationships between leadership, practice environment and patient outcomes

In this chapter I provide rationale for the research and context to the constructs of interest by exploring leadership, engagement, and confirming the subjects of interest, the practice environment and patient outcomes and nursing practice. The chapter will conclude by confirming the research objectives and significance of the research, defining the scope of

research, describing the design and introducing the theoretical perspective. The chapter will be summarised and I will present the structure of the doctoral thesis.

Background to the Research

Nurse executives globally are expected to articulate the contribution of nursing to patient care within the boardroom (Mastal, Joshi, & Schulke, 2007; McCance, Telford, Wilson, MacLeod, & Dowd, 2012); and this is becoming more important as healthcare organisations are under pressure to control costs (Francis Inquiry, 2013; Needleman, 2016). Nursing is generally the largest staff group and cost base in acute healthcare organisations, therefore continued investment in the profession is dependent upon enabling executive colleagues to appreciate the value of nursing to service delivery. Evidence is emerging of the role of the right number of well-educated nurses in reducing hospital mortality (Aiken et al., 2014) and nurse staffing has been strongly associated with the prevalence of care left undone (Ausserhofer et al., 2014). However, despite the importance of the contribution of nurses to patient safety and patient care, nurse executives are further challenged as, despite over 20 years of discourse about measuring the contribution of nursing to patient care and its importance, there is a lack of consensus on metrics and no single measure of ward level quality care. This lack of measurement consistency curtails comparability and constrains visibility of the impact of nursing practice to patient safety, clinical effectiveness, and patient experience.

The international literature suggests a consensus that frontline ward leadership roles, such as charge nurse managers, continue to be pivotal to ensuring the delivery of safe, effective care as first line managers, but that they need support and clarity of expectations of the role (Pegram, Grainger, Sigsworth, & While, 2014). Numerous organisational failures can be cited to demonstrate the variability of the quality of the experience of patients which point to a lack of connection between, and the importance of, nursing leadership at all organisational levels and patient care outcomes (Department of Health, 2014; Francis Inquiry, 2013; Health and Disability Commissioner, 2009; Healthcare Commission, 2006, 2007, 2009).

Healthcare managers have always been responsible for the delivery of high-quality care and quality improvement; however, this is developing greater significance. The New Zealand

public health system receives population-based funding from the Crown and adopted the IHI Triple Aim (Stiefel & Nolan, 2012) systems approach to improve quality in 2003, in the dimensions of "people-centered, access and equity, safety, effectiveness and efficiency" (Minister of Health, 2003, p. 8). Equity is an important health issue in New Zealand because, as of 2017, the indigenous Māori population are still twice as likely to have amenable mortality in the 0-74 age group than non-Māori, and maternal mortality for Māori women is three times that of New Zealand Europeans (Poynter, Hamblin, Shuker, & Cincotta, 2017). Poorer outcomes are also seen for Māori with the incidence of sudden infant death syndrome and deaths from family violence (Poynter et al., 2017). In New Zealand, all government policy and public services such as healthcare is bound by ensuring the foundations of partnership, participation, and protection; principles of the Treaty of Waitangi (Te Tiriti o Waitangi) are integrated into services. Partnership, protection, and participation have been identified by Māori as culturally important approaches to support Māori self-determination and advancement. The Treaty of Waitangi is the negotiated treaty between the dominant Māori chiefs and the British Crown which established New Zealand as a colonial state of the British Empire in 1840 (Came, Doole, McKenna, & McCreanor, 2018). It guaranteed Māori the same rights and privileges as the British subjects, assisted the Crown and endorsed Māori sovereignty (Came et al., 2018). Although this was the aspiration of the Treaty, in practice health equity is not yet achieved for Māori (Poynter et al., 2017). Achieving health equity is therefore a goal of health service delivery and improvement (Health Quality and Safety Commission, 2015). Improvement in the health sector, and measurement and evaluation of the quality and safety of healthcare, is supported in New Zealand by establishment of the Health Quality and Safety Commission (HQSC) in 2010 (HQSC, 2014b).

The HQSC hosted a national tour by Robert Francis QC in late 2013. Many New Zealand DHBs were visited, workshops held and staff heard Robert Francis's reflections on the public inquiry he led into Mid-Staffordshire NHS (National Health Service) Foundation Trust. Three investigations into Mid-Staffordshire NHS Foundation Trust were undertaken between March 2008 and December 2011. The findings have contributed to an international call to raise the level of transparency and accountability for the delivery of high-quality health care. The

Francis Inquiry was the final investigation. It was a public inquiry which identified concerns in relation to patient outcomes and the delivery of nursing care, impacted by inadequate nurse leadership and staffing levels (Francis Inquiry, 2013). Although the Francis Inquiry was related to one NHS Foundation Trust in England, the aftershocks of the findings of the inquiry have been felt globally. The nursing profession and hospital leaders and managers have been challenged to identify the drivers (antecedents) of quality nursing care to enable effective action for improvement and avoid such poor care in the future.

West and Dawson (2012) found that patient satisfaction was significantly higher and patient mortality significantly lower in organisations where staff engagement is high. As engagement begins to be recognised as a potentially important factor in organisational performance, rather than purely isolated to staff experience, leaders want to find ways to create highly engaged workforces and maximise the innovation and creativity their staff have to address challenges facing healthcare (Dromey, 2014). However, research into the relationship between engagement, leadership, the practice environment, and patient outcomes is required to validate this reliance and emphasis on engagement and identify factors which may augment the effect on organisation performance and patient outcomes.

Rationale for the Doctoral Thesis

Three investigations into Mid Staffordshire Hospital NHS Foundation Trust identified concerns and recommendations in relation to the patient outcomes of delivery of nursing care, as it was impacted by inadequate nurse leadership and staffing levels (Francis Inquiry, 2013). Nurses at every level must take a leadership role; the nurse executive must articulate the contribution of nursing within the boardroom (Mastal et al., 2007; McCance et al., 2012) as well as lead the development of quality metrics (Machell et al., 2010). Nurse executives provide the connection between frontline staff and organisational goals through the use of unit level goals and their contribution to overall clinical excellence (Berkow et al., 2012). Nursing leadership also has a quality leadership role in the context of providing fundamental aspects of care (Jeffs, Saragosa, Merkley, & Maione, 2016).

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Spence Laschinger and Leiter (2006) suggested that leadership is the starting point for nurses' engagement in their work. Whilst it is understood that nurse leaders influence the nursing skill mix, and there is recognition of the contribution of skill mix to lower mortality (Cummings, Midodzi, Wong, & Estabrooks, 2010) and improved outcomes (Squires, Tourangeau, Spence Laschinger, & Doran, 2010), the consequences for patients of nurse manager engagement with staff have not been measured. Research is beginning to investigate the part that leadership style plays in staff engagement (Babcock-Roberson & Strickland, 2010; Bamford, Wong, & Laschinger, 2013; Hayati, Charkhabi, & Naami, 2014; Tims, Bakker, & Xanthopoulou, 2011) and organisational performance (Kings Fund, 2012; West & Dawson, 2012; Wong, Spence Laschinger, & Cummings, 2010). Leadership styles have been categorised into approaches that focus on the task or on people and relationships (Cummings, MacGregor, et al., 2010a).

Task-oriented leadership focuses on task completion alone. Forms of this leadership style may include dissonant, instrumental, transactional, or management by exception (Cummings, MacGregor, et al., 2010a). This form of leadership was conceived to be effective leadership until the 1980s. Transactional leadership required followers to comply with requests in order to achieve reward or avoid discipline. It was more common in orderly stable conditions (Bass, Avolio, Jung, & Berson, 2003). Task-oriented styles are now recognised as inadequate to enhance nurse satisfaction (Cummings, MacGregor, et al., 2010a).

Relational leadership styles focus on people and relationships to achieve the common goal (Cummings, MacGregor, et al., 2010a). Examples include transformational and resonant leadership. Transformational leadership is adaptive and flexible and enables leaders to lift the performance of followers with feelings of involvement and commitment, and can enable groups to be more cohesive and potent (Bass et al., 2003). Transformational leadership is defined by four I's which are "idealised influence, inspirational motivation, intellectual stimulation and individual consideration" (Bass et al., 2003, p. 208). McKee and Massimilian (2006) found that resonant leaders:

> Know and can communicate what to do and why to do it. They have a high level of emotional intelligence, defined as the capacities of self-awareness, self-management,

social awareness and relationship management. They build strong, trusting relationships and manage their own emotions productively. (p. 45)

Leaders are in a precarious position within the changing context of healthcare. Consumerism is increasing as a result of scrutiny by the media, public, and commissioners of care. New technology, interventions, procedures, and pharmaceuticals reduce length of stay and increase throughput resulting in a more acute case mix. The stakes are high for leaders to ensure that high-quality care is delivered, demanding leaders who are connected with their staff. Leaders, therefore, create opportunities for staff to escalate problems and to coach and mentor staff in problem solving (Toussaint, 2013). Leaders should be concerned with identifying successful approaches to engage effectively with the purpose of improving quality care.

For the purpose of this research the 'charge nurse manager' is defined as the first line manager of a number of staff within a ward. The title used varies around the world; in the United States, 'nurse manager' is used, in New Zealand this is 'charge nurse manager', in Australia it is 'nurse unit manager' (NUM), whereas in the United Kingdom, the title used is 'ward sister' for female staff and 'charge nurse' for male staff. The role of the charge nurse manager is pivotal (Department of Health, 1999a; Doherty, 2003; Firth, 2002) to maintaining the "essence" of nursing by integrating management and leadership skills (Bondas, 2003), embedding a focus on improving quality into daily practice (Lageson, 2004), assuring quality (McCallin & Frankson, 2010), and achieving organisational goals (Mills, Pritchard, & Boden, 2005). The charge nurse manager of a clinical area acts as the "gatekeeper" (Doherty, 2003) of the application of nursing practice at the bedside in the context of the philosophy and standards of care with 24-hour responsibility (Duffield & Franks, 2001) through management, organisation, and practice (Koivula & Paunonen–Ilmonen, 2001). The charge nurse manager, through his/her engagement, makes connections which engage frontline nurses (Gray, 2012).

The role of the charge nurse manager has changed over the years (Bradshaw, 2010), from a clinical focus to one with more administrative responsibility. The experience of charge nurse managers in New Zealand reflects this shift and suggests that the role continues to change (McCallin & Frankson, 2010). This has caused issues with role clarity and role overload as they shift from the expectation of being managers to leaders (McCallin & Frankson, 2010).

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Gronn (2002) cautioned against assumptions that "managers are automatically leaders or that only managers lead" (p. 441). Also of concern is the view that authority and influence has eroded as a result of the shift from a clinical focus to a management focus, and redressing the balance is vital to enabling charge nurse managers to impact quality care (Bradshaw, 2010). Kennedy (2008) suggested that the skills and capability of the charge nurse will influence patients' experiences and outcomes. Improving frontline quality improvement competence has also been suggested as a way to articulate problems to leadership teams (American Nurses Association, 2013).

There is an understanding, therefore, that the provision of quality care is dependent on the skill and effectiveness of charge nurse managers in leading people and the delivery of practice as well as in managing the people and the caring environment. Charge nurse managers require leaders who are senior nurses to clarify expectations and model leadership behaviours to enable them to motivate and engage individuals and teams. They also need to measure and improve the quality of care in order to articulate the contribution of nursing and challenges to the delivery of quality care to leadership teams.

Healthcare, and nursing in particular, is a highly relational profession, where staff need to connect with patients as they provide physical and psychosocial care. This is evident in the literature relating to fundamentals of care which has emerged since the Francis Inquiry (Kitson, Conroy, Kuluski, Locock, & Lyons, 2013; Kitson, Conroy, Wengstrom, Profetto-McGrath, & Robertson-Malt, 2010; Kitson, Muntlin Athlin, & Conroy, 2014; Wiechula et al., 2016). This emerging research emphasises the critical relational components of nursing practice such as engaging with patients, being present with them, and helping them to cope (Feo et al., 2017). However, making a connection with patients in this way is highly emotional and requires relational energy (Cummings, 2004). It also requires staff to be positive, fulfilled (Schaufeli, Bakker, & Salanova, 2006), and willing and able to reciprocate perceived support from employers and managers with discretionary effort (Eisenberger, Cummings, Armeli, & Lynch, 1997) to connect in this way.

Staff who display a positive work-related state of fulfilment characterised by vigour, dedication, and absorption in their work are understood to be engaged in their work (Schaufeli

et al., 2006). Antecedents of engagement have been demonstrated to include aspects of the practice environment relating to unit level nurse management (Van Bogaert, Wouters, Willems, Mondelaers, & Clarke, 2013), the quality of the relationship between the supervisor and subordinate, and perception of organisation support (Brunetto et al., 2014; Shacklock et al., 2013) and authentic leadership (Wong et al., 2010). The consequences of engagement predominantly demonstrate an impact on staff outcomes, such as job satisfaction (Jenaro, Flores, Begona Orgaz, & Cruz, 2010; Shacklock et al., 2013; Van Bogaert, Clarke, Willems, & Mondelaers, 2012) turnover (Van Bogaert et al., 2012), organisational commitment, and intention to quit (Shacklock et al., 2013); rather than patient outcomes.

The antecedents of engagement are relational and, therefore, do not come at a financial cost (Bargagliotti, 2011). Bargagliotti (2011) also suggested that research into the antecedents of engagement inform nurse managers of the direction they can take to support the work environment and that "untangling the antecedents, attributes and outcomes of work engagement is important to future research efforts" (p. 1414). Several studies have investigated the relationship between aspects of the practice environment and patient outcomes, predominantly using forms of the Nursing Work Index (NWI) and nurse ratings (subjective data) of quality care (Kutney-Lee, Lake, & Aiken, 2009; Spence Laschinger & Leiter, 2006; Van Bogaert et al., 2013; Vogus & Sutcliffe, 2007). Given that high trust-in-manager was significantly related to lower numbers of reported medication incidents (Vogus & Sutcliffe, 2007) and all dimensions of engagement were related to nurse perceptions of quality care (Van Bogaert et al., 2012; Van Bogaert et al., 2013), these findings suggest a form of reciprocity between the quality of the practice environment and patient outcomes.

The provision of quality care is defined as care which is safe, clinically effective, and patient centred (Berwick, 2013) and is a key priority of healthcare organisations worldwide. Despite an increased focus on quality across healthcare organisations, there is continued evidence of failures to deliver quality basic care (Ausserhofer et al., 2014; Francis, 2013; Institute of Medicine, 2001; Kitson et al, 2010). The consequence of failure to provide 'basic' or fundamental aspects of care such as adequate food and fluids, proper hygiene, and adequate pain relief can be serious, resulting in compromised patient safety, poor quality care, poor

consumer experience and, ultimately, adverse patient outcomes (Feo & Kitson, 2016; Francis 2013). However, the delivery of these fundamental expectations of care requires the nurse to be relationship-centred, establishing trust to address the physiological, psychological, and relational needs of the patient despite the contextual challenges they face (Kitson, 2016).

Ongoing evidence of nurses' failure to provide essential care has led the nursing profession to be re-examined by healthcare organisations, the public, and the profession itself, a process in which nursing's values, skills, and training, and the systems in which nurses provide care have been scrutinised (Francis, 2013; Kitson et al., 2013; Scott, 2014). This has led to a certain amount of introspection about whether nursing has actually lost sight of its core values of care and caring (Francis Inquiry, 2013; Kitson et al., 2010; Parr, Bell, & Koziol-McLain, 2018; Vollman, 2009). This scrutiny and a renewed emphasis on patient centred care have brought attention back to the nursing essentials of care (Achterberg, 2014; Kitson et al., 2010, 2013).

Nurses have been recognised for some time as needing to participate in the development and monitoring of local quality, focusing on the fundamental aspects of care (Department of Health, 1999b). A growing body of literature has addressed measuring the impact of nursing care on patient outcomes by focusing on (a) nurse-sensitive outcome indicators (Donaldson, Storer Brown, & Aydin, 2005; Dubois, D'Amour, Pomey, Girard, & Brault, 2013), (b) outcomes potentially sensitive to nursing (Carryer, Diers, McCloskey, & Wilson, 2010), and (c) measurement of the quality of nursing care (process and experience) (Hurst, 2005). More recently, in the context of global financial constraint, the literature focus has expanded to understanding the impact of leadership (Cummings, Midodzi, et al., 2010; Wong, Cummings, & Ducharme, 2013) and nursing workforce skill mix (Aiken et al., 2014; Ausserhofer et al., 2014; Carryer et al., 2010; McCloskey & Diers, 2005; Tourangeau et al., 2007) on patient outcomes, to articulate and create recognition of the vital contribution of nursing to quality. This is because nursing is often the largest single proportion of an organisation's cost base and as a result must be able to demonstrate its value to avoid cost reduction bids. The challenges referred to by Needleman, Kurtzman, and Kizer (2007) in identifying and measuring nurse-sensitive measures relate to the variety of indicators used and laborious nature of data

gathering, particularly when the recording process of care is not automated and there is a reliance on different data sources such as administrative data, evidence of care, and coded data.

There is evidence of growing visibility of nurse-sensitive indicators globally; three organisations working together in Canada (VanDeVelde-Coke et al., 2012) and the Council on Health Care Standards in Australia have all been monitoring nurse-sensitive indicators (The Australian Council on Healthcare Standards, 2015). Between 2012–14 in England, a national initiative was launched to measure and improve harm-free care through the use of a safety thermometer comprising falls, pressure injuries, and urinary catheter related infection (Department of Health, 2012), commonly considered to be nurse-sensitive indicators (Dubois, D'Amour, Pomey, et al., 2013; Griffiths, Jones, Maben, & Murrells, 2008), and venous thromboembolism, an outcome potentially sensitive to nursing (Carryer et al., 2010) (Department of Health, 2012; NHS Commissioning Board, 2013). However, there has not been progress internationally towards using an agreed composite measure of nursing quality that focuses on the fundamental aspects of care. Despite these enhancements, nurses still need to better articulate their contribution with reliable and consistent metrics which measure fundamentals of care and report nursing's contribution positively (Feo & Kitson, 2016). A measurement and improvement programme using fundamentals of care has been demonstrated as helpful to nursing leaders to provide visibility of the contribution of nursing to quality care (Parr et al., 2018). Although this framework has been used to demonstrate improvements in care quality, exploratory research to further understand the relevance of the metrics to engagement, leadership, and relationships with the organisation and leaders would be beneficial.

Research Objectives

The relationship between engagement and organisational performance in health, such as quality nurse-sensitive outcomes of care delivery, is an identified research gap particularly within health and nursing settings. The purpose of this research is to determine, validate, and

revise the *a-priori* model that explains the relationships between engagement and charge nurse manager leadership, the leadership relationship, practice environment, and patient outcomes.

Significance of the Doctoral Thesis

This research extends the existing literature by investigating resonant leadership in conjunction with perceived organisation support and leader-member exchange relationships, and how these constructs relate to patient outcomes. The research provides a positive frame to investigate the mediating effect of engagement on leadership, relationships, and quality of care. The research investigated a real world problem for nurse leaders; that is, to identify modifiable factors to improve patient safety and patient experience. As a result, the findings have significance for being able to improve how people feel about the experience of their care, and the ability to improve the safety of care.

Research Scope

The focus of this research is the hospital health care delivery experience of charge nurse managers and their nursing and clerical teams at an urban DHB in New Zealand. The participants were employed in acute inpatient wards at the DHB. Institutional data of patient safety (falls and pressure injuries), fundamentals of care, patient perception (complaints), and patient satisfaction (friends and family test) nurse-sensitive indicators were gathered and matched to the inpatient wards.

Key Definitions

In Chapter Two I explore the literature, concepts, and constructs of relevance to the research question. The key definitions of the research that are necessary to understand the research question are outlined in this section.

> ***Resonant leadership.*** Resonant leaders are defined as those
>
> in tune with the people around them. They know and can communicate what to do and why to do it. They have a high level of Emotional Intelligence, defined as the capacities of Self-Awareness, Self-Management, Social Awareness and Relationship Management. (McKee & Massimilian, 2006, p. 45)

Leader-member exchange. The leader-member exchange (LMX) theory reflects the taxonomy of the leader, the followers, in this case the staff on the wards/units, and the relationships between the two which develop over time and can be defined as high or low quality as a result of the reciprocal influence and interactions (Graen & Uhl-Bien, 1995).

Perceived organisation support. Perceived organisation support is defined as the exchange relationship between the employee and his or her organisation as an assessment of the quality of the employment exchange relationship (Eisenberger et al., 1997; Saks, 2006).

Work engagement. Work engagement is defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption… a persistent and pervasive affective–cognitive state that is not focused on any particular object, event, individual, or behaviour" (Schaufeli & Bakker, 2004, p. 295).

Perceptions of unit care quality. Perceptions of unit care quality is the nurses' assessment of care on the unit, the last shift, patient readiness for discharge, and perception of quality over the past year (Aiken, Clarke, & Sloane, 2002).

Institutional data. Institutional data is that which is already being captured by the institution in the process of care delivery, service evaluation, and improvement.

Falls. A fall is defined as "inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest in furniture, wall or other objects" (World Health Organization, 2007, p. 1).

Pressure injuries. A pressure injury is defined as "a localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction" (Black, 2007, p. 5).

Fundamentals of care (FOC). FOC are defined as

> fundamental care involves actions on the part of the nurse that respect and focus on a person's essential needs to ensure their physical and psychosocial wellbeing. These needs are met by developing a positive and trusting relationship with the person being cared for as well as their family/carer. (Feo et al., 2017, p. 11)

Patient experience. Patient experience has been defined by the Beryl Institute as "the sum of all interactions, shaped by an organization's culture, that influence patient perceptions across the continuum of care" (LaVela, 2014, p. 29). Complaints reflect written or oral (Lloyd-

Bostock & Mulcahy, 1994) "expressions of grievance" and "dispute within a health care setting" (Reader, Gillespie, & Roberts, 2014, p. 679). Patient satisfaction reflects an end state judgment of achieved objectives (LaVela & Gallan, 2014).

Research Questions and Research Design

As a senior nurse leader, I bring to this research international clinical, management, and leadership experience gained over 26 years. I was a Director of Nursing and Patient Experience in London during the Francis Inquiry, and during that time was confronted by the Inquiry's findings and subsequent national scrutiny and professional introspection. At the same time I was searching for a way to articulate the quality and safety of the care that was being provided in my services at a time when every budget line was being scrutinised for savings opportunities. As both Director of Nursing and Patient Experience, I was able to activate nursing and other leaders to focus on patient feedback and identify locally relevant drivers for improvements in quality and patient experience. Fundamental to this work was the concurrent refreshing and embedding of the organisation's values. Efforts to focus on both staff and patient experience through the 'values' lens was instrumental in improving what both patients and staff felt about working and being cared for at the NHS Trust (Dromey, 2014).

I returned to New Zealand to a senior nursing professional leadership role within a DHB five years ago. This was when the Francis Inquiry had published its findings (Francis Inquiry, 2013) and the HQSC (2013) hosted a speaking tour of New Zealand for Robert Francis. The HQSC was becoming established and the focus on understanding quality in DHBs had been initiated but was embryonic with the recent introduction of quality safety markers for falls, hand hygiene, and perioperative harm (HQSC, 2017).

The New Zealand culture of relationships and making connections endures in Māori practice and custom, and is reflected in the 'values' of the DHB through the concepts of 'connected' 'with compassion' and 'everyone matters' (Waitemata District Health Board, 2018). The translation of my experience in England to the New Zealand setting is important context to the theoretical perspective and ontological and epistemological positions of the research.

Research questions

The research aims to build on existing research to determine, validate, and revise the *a-priori* model that explains the relationships between engagement and charge nurse manager leadership, the leadership relationship, practice environment, and patient outcomes.

Research design

The research is a cross-sectional self-report survey of nurses and clerical staff and institutional data at an urban DHB. IBM SPSS Statistics 25.0 ® software will be used to conduct analysis of the demographic characteristics and exploratory factor analysis. IBM AMOS 25.0 ® software will be used to conduct confirmatory factor analysis and structural equation modeling. Path and mediation analysis will be conducted using PROCESSv2.16.3 in IBM SPSS Statistics 25.0 ® software (Hayes, 2013). Mediation is where "there is a direct effect between an independent variable and a dependent variable. There are also indirect effects between an independent variable and a mediator variable, and between a mediator variable and a dependent variable" (Purdue University, 2015, p. 3).

Theoretical perspective

The delivery of healthcare and nursing practice is dependent on forming high-quality relationships (Cummings, 2004; Kitson et al., 2014). Interactions which lead to obligations which are interdependent and contingent on each other and can generate high-quality or low-quality relationships are conceptualised in Social Exchange Theory (SET) (Cropanzano & Mitchell, 2005). These interactions and obligations are examples of reciprocal exchanges where an action by one person leads to a response by another, and which may lead to better work relationships, trust, or commitment. Saks (2006) suggested SET can explain engagement because employees will use their engagement as a form of reciprocity to an organisation's actions, as a rule or norm of exchange, choosing to be more or less engaged by devoting varying amounts of cognitive, emotional, and physical resources to their work. Resources are exchanged in healthcare delivery which may be in the form of relationships and mutual investment, may be socio-emotional and symbolic, and may lead to emerging social relationships (Cropanzano & Mitchell, 2005). The practice environment, particularly the relationships with the organisation and between the leader and staff member, are important

social relationships. The relationship between aspects of the practice environment and patient outcomes have been investigated but not using SET as the theoretical lens.

Summary of Chapter One

There is a paucity of research examining work engagement in the nursing context and none investigating leadership style alongside the quality of the relationship between the practice environment relationships between the leader and staff member, organisation support, work engagement, and patient outcomes.

Structure of this Doctoral Thesis

In Chapter Two I explore the relevant literature addressing leadership, the quality of the practice environment and workplace relationships, engagement and quality of care. I will describe the theoretical perspective, SET, in more detail and position it within relevant literature and the New Zealand health context. I will identify the research gaps, propose the *a-priori* model, research question, and hypotheses. Finally I will present the purpose and objectives of the research.

In Chapter Three I describe the research method. I start by presenting the ontological and epistemological considerations and the research methodology. I clarify the study variables and constructs, outline the development of a survey, the Leadership and Engagement of Nurses (LEON) survey, using the seven steps outlined in Hinkin, Tracey, and Enz (1997), data collection of the survey and institutional data. I then describe the approach to data analysis from data management to structural equation modeling and path and mediation analysis using the two-step approach suggested by Anderson and Gerbing (1988). I outline the various statistical packages used to undertake the analysis. The penultimate section outlines the ethical approval processes and approvals. Finally, the chapter is summarised.

Chapter Four presents the results of the research. I describe the decisions to finalise the sample responses and present relevant demographic characteristics. I outline the exploratory factor analysis of each of the constructs of the LEON survey and describe the psychometric properties of the scales. The full measurement model which resulted from confirmatory factor analysis is presented, as are results of the processes to test the full

measurement model suggested by Anderson and Gerbing (1988). Results from the common-method bias analysis are presented and then the structural equation model is tested with the data. The final path structural equation model and hypothesis summary is presented. Finally the results of the path and mediation analysis are presented and the chapter is summarised.

In Chapter Five the findings are discussed in the context of existing literature and the theoretical perspective. I present key findings and the significance of the study prior to a more in-depth discussion and interpretation of the results. A section on Māori experiences is included prior to the summary of the chapter.

Chapter Six concludes the thesis. I present the theoretical contributions and implications for practice and nursing leadership. The strengths and limitations are considered in relation to the research design, respondents, and instruments. I suggest implications for future research and opportunities for knowledge translation prior to concluding the thesis.

Chapter 2: Literature Review

Introduction

In this literature review I will examine engagement and its relationship with antecedents and patient outcomes (see Figure 1, Chapter One, p. 1). The constructs will be explored, and relationships that are evidenced in the literature will be described in order to introduce the rationale for the research and its design. Aspects of leadership will be discussed in relation to leadership style, the quality of the leader-member relationship, and its relation to staff perceptions of organisational support. Engagement will be explored and defined, as will quality of care, and the nature of nurse-sensitive indicators clarified for the purpose of this research. The theoretical perspective SET will be introduced. Research gaps will be identified and the *a-priori* model and hypotheses described. The study variables will be explained. Finally the purpose and objectives of the research will be set out.

A literature search was conducted to identify studies that examined the practice of nursing leadership engaging with staff. The databases for health sciences (CINAHL and MEDLINE) were searched using the following terms: charge nurse, ward sister, nurse unit manager, frontline manager, leadership, engagement, measurement, patient outcomes, impact and quality work engagement, employee engagement, leadership, measurement, patient and nurse-sensitive outcomes. Reference lists were reviewed for additional publications. The search was restricted to the 10 years between October 2006 and October 2016 and adult nursing. Relevant literature published since 2016 will be considered in Chapter Five: Discussion. Literature evaluating frontline nurse manager development programmes, mental health, and practice level service developments were excluded.

Leadership Outcomes for Staff and Patients

Leadership is critical to effective staff engagement (Spence Laschinger & Leiter, 2006). Relational leadership styles which focus on people and relationships to achieve the common goal are now favoured over task-oriented styles (Cummings, MacGregor, et al., 2010a). Goleman, Boyatzis, and McKee (2002) theorised that leaders varied their style depending on circumstances into resonant (visionary, coaching, affiliative, or democratic) or dissonant;

pacesetting or commanding (Cummings, 2004). Resonant, dissonant, and mixed leadership styles were identified in a survey of nurses in Alberta Canada using the Goleman et al. (2002) theory of emotional intelligence and 13 emotional intelligence competencies within the Aiken, Smith, and Lake (1994) Revised Nursing Work Index (NWI-R) (Cummings, 2004). Cases were separated according to the response patterns into six databases with each one reflecting the four resonant and two dissonant leadership styles. The findings demonstrated that resonant leaders are visible and accessible and bring relational energy to the work place, listen and respond to staff, manage conflict, and empower nurses in patient care decisions (Cummings, 2004).

In a 2010 systematic review, 24 studies were identified demonstrating that leadership styles which focused on people and relationships (transformational, resonant, supportive, and consideration) were associated with higher nurse job satisfaction (Cummings, MacGregor, et al., 2010b). Two further studies demonstrated an association between leadership style and outcomes for staff (Cummings, Hayduk, & Estabrooks, 2005; Spence Laschinger, Wong, Cummings, & Grau, 2014). Resonant leadership styles mitigated negative physical, emotional, and job satisfaction effects of hospital restructuring on nurses' perceived importance of the leader-member relationship (Cummings et al., 2005). More recently, resonant leadership was strongly correlated to empowerment and job satisfaction (r = 0.47 and 0.43, respectively) (Spence Laschinger et al., 2014).

Relational leadership clearly has relevance for the experience of staff. In light of findings by West and Dawson (2012), where staff experience appears to be correlated with patient experience, in the next section I will explore literature where leadership in nursing has been investigated in relation to patient outcomes.

Leadership and outcomes for patients

In a systematic review of the relationship between nursing leadership and patient outcomes, Wong et al. (2013) identified 20 relevant studies. Of these, six were conducted in acute hospital environments and demonstrated a significant association between leadership styles and patient outcomes. Relational leadership styles were associated with reduced mortality, specifically transformational leadership (Capuano, Bokovoy, Hitchings, & Houser, 2005) and high resonant

leadership (Cummings, Midodzi, et al., 2010). However, 'lower manager ability and support' was also related to reduced mortality (Tourangeau et al., 2007). This paradoxical finding was surmised to be related to the size of 'span of control' of the manager. Reductions in medication errors and pneumonia were associated with transformational leadership, where stronger leaders positively influenced staff expertise as they have a higher ratio of competent and proficient nurses (Capuano et al., 2005). Reduced medication errors and length of stay indirectly related to apparent social support of managers through interventions regarding absenteeism, overtime, turnover, and nurse to patient ratios (Paquet, Courcy, Lavoie-Tremblay, Gagnon, & Maillet, 2013). Nurse perception of quality care was predicted by nurse management at the unit level ($R2 = .61, p < .05$) (Van Bogaert, Meulemans, Clarke, Vermeyen, & Van de Heyning, 2009). Leadership was positively associated with staff expertise (Houser, 2003), with a moderate inverse relationship to patient outcomes, although the specific outcomes affected were not identified.

Vogus and Sutcliffe (2007) explored the benefits of bundling 'safety organising', 'trust in manager', and 'use of care pathways' on medication errors. Safety organising is the process of gathering, understanding, and sharing learning from adverse events and trust in manager is the extent to which registered nurses perceive their nurse manager treats them fairly and acts with integrity (Vogus & Sutcliffe, 2007). Results indicate that a combination of high 'trust in the manager' and high 'use of care pathways' is significantly related to lower numbers of reported medication incidents. The 'trust in manager' items reflect aspects of the relationship between leader and employee and the practice environment. This research is of interest as it indicates that high-quality leader relationships such as 'trust in manager' are associated with improved patient safety such as lower medication errors.

Cummings, Midodzi, et al. (2010) examined the relationship between nursing leadership competencies reflecting emotional intelligence (Cummings et al., 2005; Goleman et al., 2002) and 30-day mortality determinants used by Tourangeau (2005). The categories of resonant, dissonant, and mixed leadership (Cummings et al., 2005) were applied to 90 hospitals in Alberta, and rated using secondary analysis to determine the nurse-assessed leadership style.

High resonant leadership was found to be significantly related to lower mortality (Cummings, Midodzi, et al., 2010).

In a cross-sectional survey of 600 registered nurses in Canada, a strong relationship was demonstrated between resonant leadership and quality of leader-member relationships. Safety climate was affected by leader-member relationships and the work environment and a small effect was seen on nurse reported medication errors (r = -0.22) by safety climate, not relationship quality (Squires et al., 2010). The instruments used in this research included the leader-member exchange scale (LMX-7) (Graen & Uhl-Bien, 1995) the Safety Climate Survey (Sexton & Thomas, 2003), the Perceived Nursing Work Environment (PNWE) (Choi, Bakken, Larson, Du, & Stone, 2004), and the Resonant Leadership Scale (Cummings et al., 2005) which was the same scale used by Cummings, Midodzi, et al. (2010).

The relational leader appears to have a positive effect on relationships, safety culture, and perception of exposure to adverse events. In relation to patient outcomes, two studies were identified (Cummings, Midodzi, et al., 2010; Squires et al., 2010). In Canada, 5000 nurses' perception of leadership style categorised 90 hospitals from resonant to dissonant (Cummings, Midodzi, et al., 2010). In the final model (5), after adjusting for patient demographics, comorbidities, and institutional and hospital nursing factors, the relative contribution of nursing leadership styles to 30-day mortality was 5.15%, but the residual variance was non-significant 0.03 (p = .241). When compared with the mixed leadership group as reference, Cummings, Midodzi, et al. (2010) demonstrated that high-resonant leadership styles were significantly associated with 26% lower odds of mortality indicating the potential for patient outcomes to be modelled as a consequence of resonant leadership.

Three studies were identified which investigated authentic leadership (Wong et al., 2010), nurse management components of the practice environment (Van Bogaert et al., 2013), and service climate (Abdelhadi & Drach-Zahavy, 2012) with perceptions of unit care quality (Van Bogaert et al., 2013; Wong et al., 2010) and patient centred care (Abdelhadi & Drach-Zahavy, 2012). Wong et al. (2010) investigated the relationship between authentic leadership, trust in manager, engagement and willingness to speak up (voice behaviour), and perceptions of unit care quality. The findings confirmed that authentic leadership and trust in manager had

positive effects on speaking up and perceptions of unit care quality when mediated by engagement and trust in manager. A study investigating the relationship between aspects of the practice environment, work engagement, and nurse assessed quality of care demonstrated that unit nurse management predicted nurse assessed quality of care on the unit and on the last shift (Van Bogaert et al., 2013). One study investigated the relationship between service climate, work engagement, and patient centred care in rest homes in Israel and confirmed that engagement mediated service climate and observed patient centred care behaviours (Abdelhadi & Drach-Zahavy, 2012). Results demonstrate that leadership, particularly relational leadership styles are likely to have a positive effect on patient outcomes such as mortality, nurse reported medication errors and quality of patient care (see Figure 2).
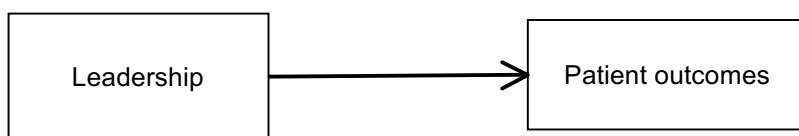
Figure 2. Relationship of leadership to patient outcomes

Leadership and outcomes for staff

Much of the existing nursing leadership research focuses on the impact of the practice environment on constructs such as burnout, intention to leave, and workplace incivility. Resonant leadership has been shown to be associated with higher levels of job satisfaction and workplace empowerment (Spence Laschinger et al., 2014; Wagner, Warren, Cummings, Smith, & Olson, 2013), structural empowerment (Bawafaa, Wong, & Laschinger, 2015), intention to stay (Hewko, Brown, Fraser, Wong, & Cummings, 2015), and lower levels of burnout and workplace incivility (Spence Laschinger et al., 2014). This demonstrates that negative experiences such as burnout and bullying are unlikely when resonant leadership is high.

In nursing, where relationships are critical, the leadership style needs to be considered. Relational styles use social exchange processes as they invest relational energy (an interaction) into collaborative relationships (quality of the relationship) with nurses, thereby positively influencing health and well being (altering future exchanges) and outcomes for patients (job performance) (Cummings, 2004). The following section will explore workplace relationships in a

healthcare context, both with the organisation and the leader, and their relevance as antecedents of engagement.

Relationships

The experience of staff in healthcare organisations has been shown to be related to the quality of care provided to patients and, in particular, employee engagement is rated as important to patient care (Dawson, 2014). A meta-analysis of physician burnout noted correlations between emotional exhaustion and lack of quality and safety (Lee, Seo, Hladkyj, Lovell, & Schwartzmann, 2013). Qualitative case studies of four units in the NHS in England examined good and not so good examples of the local influence of leadership, relationships, and the influences on staff and patient wellbeing. Findings identified (a) satisfied and positive staff can shape patient experience, (b) leaders must role model attitudes and behaviours setting expectations, (c) local climate can be more important than organisational climate when it comes to staff wellbeing, and (d) co-worker relationships were important to manage stress (Maben et al., 2012). Pinder, Greaves, Aylin, Jarman, and Bottle (2013) analysed 60,000 staff responses to the NHS staff survey and the Hospital Standardised Mortality Rates (HSMR) for 147 NHS trusts and determined using Pairwise Kendall-τ correlation analyses with 95% CI, that the nurse responses to two questions were most strongly correlated to HSMR. These two questions were "*care of patients is my trust's top priority*" (r_t (N = 22291)−0.23, p < 0.001) and "*If a friend or relative needed treatment I would be happy with the standard of care provided by this trust*" (r_t (N = 22232)−0.20, p < 0.001) (Pinder et al., 2013).

Given the evidence which relates staff wellbeing, work engagement, and service climate to patient care and experience (Abdelhadi & Drach-Zahavy, 2012; Lee et al., 2013; Maben et al., 2012; Pinder et al., 2013; Van Bogaert et al., 2013), it is right to question the antecedents of staff wellbeing, work engagement, and service climate in the pursuit of improved patient care and patient experience. Whilst there are a variety of structural components which have been shown to have an effect, such as staffing and workload, and the impacts of these on staff such as burnout and intention to leave (Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Ausserhofer et al., 2014; Spence Laschinger & Leiter, 2006; Van Bogaert, Meulemans, et al.,

2009), there is an obvious connection to the practice environment. Two aspects of this are the exchange relationships which exist, and the degree of perceived organisational support received. Perceived organisation support is considered an indicator of the quality of the relationship between employer and employee and has been shown to predict organisational commitment. The exchange relationship is conceptualised as the relationship between the leader and follower (Cropanzano & Mitchell, 2005). This suggests that the two constructs are distinct and will be discussed in the following sections.

Exchange relationships

The concept of reciprocity is a fundamental component of the relationship based LMX theory (Graen & Uhl-Bien, 1995). Three domains make up this theory – the leader, the follower and the relationship, with the emphasis on all three in combination. The relationship focus is on its quality; of trust, respect, mutual obligation and reciprocal influence between the leader and follower (Erdogan & Bauer, 2015; Graen & Uhl-Bien, 1995). However, the quality of the exchange varies by employee and is dependent upon the degree of support, trust, and respect (Saks, 2006). Effectiveness relies on the partners, leaders, and followers to develop mature bilateral leadership relationships (Graen & Uhl-Bien, 1995).

Brunetto, Farr-Wharton, and Shacklock (2011) undertook a survey using the LMX Framework of 900 nurses working in private hospitals in Australia. The research explored NUM-nurse communication relationships, perceptions of role ambiguity about NUMs, perceptions of autonomy, and the impact upon nurses' levels of affective commitment (Brunetto et al., 2011). Dissatisfaction with supervisor communication was found to influence subordinate role ambiguity; perceptions of role clarity influence autonomy and affective commitment is influenced by perceptions of autonomy and supervisor communication (Brunetto et al., 2011). Large effect sizes were also seen between resonant leadership and leader–nurse relationship (r = 0.52) (Squires et al., 2010). This study indicates the relevance of including resonant leadership as a construct underpinned by SET and reinforced the potential for replicating positive relationships between resonant leadership and leader–nurse relationships (see Figure 3, p. 24).
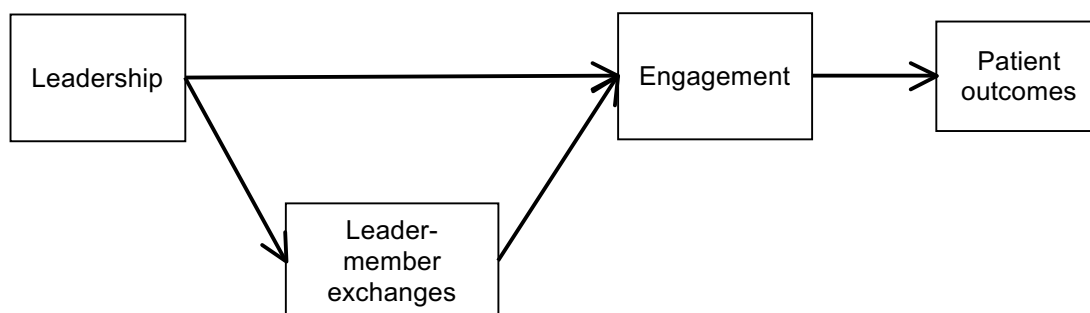
Figure 3. Relationship of leadership, leader member relationships, engagement and patient outcomes

Early thinking and research suggested that LMX leads to in-group or out-group experiences where the in-group receives information, support and participation, and the 'supervisor' receives dedication and support; while the out-group would face higher job demands and inadequate resources (Brunetto et al., 2014). This concern is highly relevant in nursing as LMX nurse leaders are pivotal in resource allocation. However, the aim is that all staff and organisations benefit from high-quality workplace relationships (Shacklock et al., 2013). The highly emotional nature of nurses' work also lends itself to LMX (Brunetto et al., 2014).

Organisational support

Inherent in the findings relating to engagement, patient and staff outcomes is the concept of organisational support. Much of the evidence has emerged from development of Magnet hospital characteristics and measurement using NWI and the PES-NWI (Aiken & Patrician, 2000; Armstrong & Laschinger, 2006; Kramer & Hafner, 1989; Lake, 2002). However, as research into relational leadership and the quality of LMX relationships emerge as important, emphasis is shifting towards an alternative measure of organisational support. Perceived organisational support (POS) is framed within the social exchange theoretical perspective (Eisenberger et al., 1997). Given the emotional nature of nursing work and the requirement to provide effort beyond the bounds of the employment contract, POS becomes important. The nature of reciprocity again exists, whereby a psychological contract exists between employers and employees where there is an expectation that each takes the other's needs into account (Eisenberger et al., 1997). The voluntary nature of discretionary donation of resources is considered to be more highly valued than if it was not voluntary, and benefits received in return

are likely to be greater (Eisenberger et al., 1997). POS, therefore, reflects "the extent to which the organization values their contribution and cares about their wellbeing and provides a basis for deciding whether increased effort for the organization will be noticed and rewarded" (Eisenberger et al., 1997, p. 818).

Saks (2006) was the first to identify POS as an antecedent to job and organisation engagement. Several researchers have since investigated this further using SET, POS, and work engagement (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013; Trinchero, Brunetto, & Borgonovi, 2013). In a cross-sectional self-report study of 897 nurses in public and private hospitals in Italy, Trinchero et al. (2013) found, using hierarchical regression, that the variance of POS, training and development and discretionary power accounted for over one-third of nurses' engagement ($R_2 = 0.366$, $P < 0.01$). As an antecedent, POS accounted for only 7% of the variance ($\Delta R_2 = 6.9$, $P < 0.01$) (Trinchero et al., 2013). In a cross-sectional survey of 510 nurses working in private hospitals in Australia, Shacklock et al. (2013) demonstrated that POS and LMX were both antecedents of work engagement when investigating employee outcomes such as job satisfaction, affective commitment, and intention to quit using partial least squares analysis (see Table 1). Brunetto et al. (2014) demonstrated in a self-report survey of 510 nurses from 12 Australian private sector hospitals and 193 police officers from one region of Australia, that POS and LMX were again antecedents of work engagement (see Table 1). Dasgupta (2016) also demonstrated in a survey of 679 nurses in private hospitals that both POS and LMX were antecedents of engagement when investigating its relationship with team and affective commitment. Results of the studies cited above demonstrate that workplace relationships, both with the employer and with the leader are forms of social exchanges and are likely to be replicated to predict the level of engagement with their work (see Table 1 and Figure 4, p. 26).

Table 1. Path coefficients, t-statistic and p value for Perceived Organisation Support (POS) and Leader-Member Exchange (LMX) as antecedents of Work Engagement (UWES)

Author	POS			LMX		
	B	*t*-statistic	Sig level	B	*t*-statistic	Sig level
Brunetto et al. (2014)	.44	11.36	<.001	.15	3.27	<.01
Shacklock et al. (2013)	.44	8.97	<.001	.13	2.57	<.05
Dasgupta (2016)	.40	19.71	<.001	.28	6.62	<.001
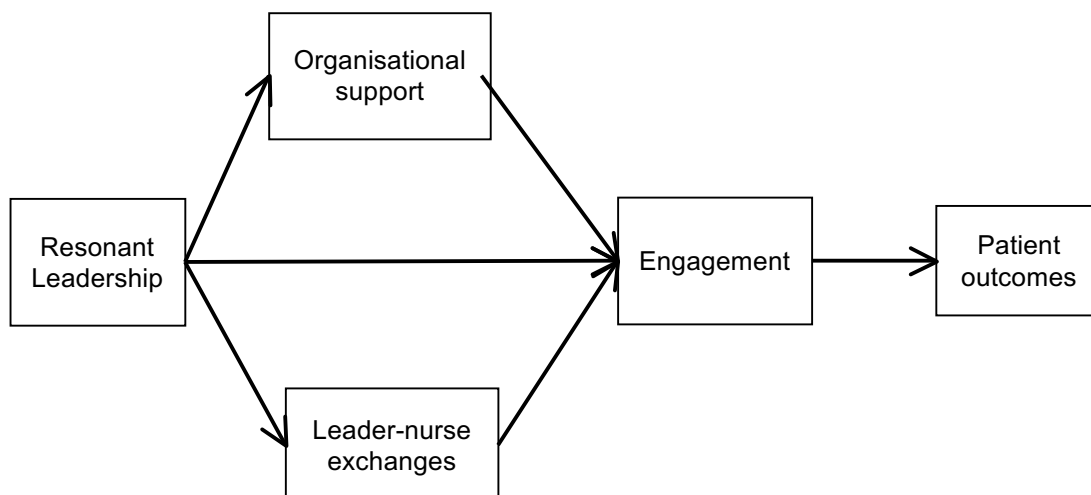
Figure 4. Relationship of leadership, relationships, engagement and patient outcomes

In the next section the literature regarding engagement will be explored. The processes of engagement and studies which have measured engagement are considered and a measurement scale and definition for use in this research will be identified. Nursing research using this scale will be discussed.

Engagement

Engagement is the practice of creating alignment with the organisation's goals, which has emotional and rational elements, and results in discretionary effort over and above the requirements of the job (McBain, 2007). Engagement is also defined as an "affective and motivational response at work" (Simpson, 2009, p. 1013) where there is a relationship between the employee and the work (White, Wells, & Butterworth, 2014). Engagement is not believed to be simply the opposite of burnout on a continuum, but they are now considered independent of each other and moderately negatively related (Schaufeli & Bakker, 2004). In a review of work engagement literature, Simpson (2009) categorised the research into four constructs: (i) personal engagement, (ii) burnout / engagement, (iii) work engagement, and (iv) employee engagement.

A helpful construct in the context of engagement is an application of Donabedian's (1969) structure, process, outcome (SPO) taxonomy. The taxonomy has been successfully used as a framework for a systematic review to understand the impact of leadership on patient

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outcomes in nursing settings by Wong et al. (2013). The 'structure' was the leadership style, either relational or task. The 'process' was the application of leadership to create work conditions, motivate, build teams, facilitate care process, and promote participation. The 'outcome' was the observed or administrative records of patient outcomes which may include mortality, satisfaction, adverse events, complications, or utilisation. Engagement may be considered as a leadership 'process' where the leader utilises some mechanism to engage staff. Engaged staff may be considered as an 'outcome' of the leadership process. This is an example of SET where the interactions through the application of leadership generate a relationship, and the conditions within which employees are supported or not. Where positive interactions and relationships occur, over time this develops trust and commitment and increased engagement. In the next section I explore literature relating to leader engagement processes.

Leader engagement processes

In this section the literature related to the process of staff engagement is reviewed. Five studies were identified (Bamford-Wade & Moss, 2010; Brunetto et al., 2011; Henderson, 2013; McMurray & Williams, 2004; Tomlinson, 2012). McMurray and Williams (2004) undertook a survey of 140 nurse managers in public sector hospitals in Australia to explore their level of education, tenure, leadership style, perception and knowledge of organisational structures, on the impact of innovation. They found that managers' approach and style impacted development of new ideas and effective innovation.

Transformational leadership was identified in two models of engagement (Bamford-Wade & Moss, 2010; Henderson, 2013). Both used transformational leadership to engage staff. The process of engagement used by Bamford-Wade and Moss (2010) was shared governance, which resulted in confident and committed staff. Henderson (2013) used transformational leadership as the model of engagement by NUMs to motivate staff to engage with each other and improve a ward's working environment.

Tomlinson (2012) explored leadership styles of senior charge nurses and the effect on clinical teams from 20 semi-structured interviews with staff nurses. Four themes were identified; transformational leadership, distributed leadership, team engagement, and pressures and

priorities. Triggers for each theme were developed to aid articulation of each theme. The triggers appear to be a combination of SPO and align in some way to the constructs of engagement suggested by Simpson (2009) (see Table 2, p. 29). 'Pressure and priorities' reflected structural components such as conflicting priorities and meeting targets before providing high-quality care. 'Transformational' leadership (Bass et al., 2003) triggers were predominantly processes including encouraging, teaching, learning, and giving feedback. 'Distributed' leadership (Spillane, 2006) triggers predominantly reflected individual outcomes of personal engagement including recognition of contribution, taking on leadership roles within the team, autonomy, feeling supported, and being confident to make decisions. 'Team engagement' (McBain, 2007; Mehra, Smith, Dixon, & Robertson, 2006) triggers were predominantly outcome focused and included team cohesion, team success, and good relationships. However several of the team engagement and transformational leadership triggers did not easily align to any of the constructs proposed by Simpson (2009).

Table 2. Leadership triggers identified by Tomlinson (2012) mapped against Donabedian (1969) structure process outcome (SPO) and Simpson (2009) engagement constructs

Leadership theme	Trigger	SPO	Engagement construct
Pressure and priorities	Conflicting pressure and priorities.	Structure	Burnout
Pressure and priorities	Need to meet organisational objectives overriding need to deliver high-quality care.	Structure	Burnout
Distributed	Being part of wider organisational goals and objectives.	Outcome	Employee
Team engagement	Team success, good relationships.	Outcome	Employee
Team engagement	Team cohesion.	Outcome	Employee
Distributed	Autonomy, feeling supported and confident to make decisions.	Outcome	Personal
Distributed	Taking on a leadership role within the team.	Outcome	Personal
Distributed	Working and thinking independently.	Outcome	Personal
Distributed	Contribution recognised.	Outcome	Personal
Distributed	Encouraged to take opportunities.	Process	Personal
Transformational	Teaching, learning, working towards achieving shared goals.	Process	Personal
Distributed	Working to full potential, delegation of work.	Outcome	Work
Team engagement	Staff attitudes, ward culture.	Outcome	
Team engagement	Dynamics motivation.	Outcome	
Team engagement	Dealing with conflict.	Outcome	
Team engagement	Shared priorities.	Outcome	
Transformational	Learning from mistakes, delivering a shared team vision.	Outcome	
Team engagement	Communication.	Process	
Transformational	Clear, visible authority, coaching, encouraging, giving positive feedback.	Process	
Transformational	Promoting confidence in others.	Process	
Transformational	Encouraging staff to develop and grow in their roles, challenging ways of working.	Process	
Pressure and priorities	Poor staffing levels.	Structure	
Pressure and priorities	Lack of sufficient supplies to carry out role.	Structure	

Two 'pressure and 'priority' triggers such as (i) staffing levels and (ii) adequate resources to carry out the work are 'structural' components which feature in the PES-NWI instrument's staffing and resource adequacy subscale (Lake, 2002). Applying these five studies to the SPO engagement model proposed by Wong et al. (2013) it is possible to attribute the outcome of the leadership process (individual affect), to the four engagement constructs proposed by Simpson (2009) (see Table 3).

Table 3. Outcome of leadership styles and process level and type of engagement

Structure: Leadership Style	Process: Leadership	Outcome: individual affect	Engagement construct	Author
Transformational by DON	Shared governance	Confident, committed staff	Personal	Bamford-Wade and Moss (2010)
Transformational by NUM	Modelling behaviour	Staff Recognition and teamwork	Employee and work	Henderson (2013)
Management styles and organisational structure	Involvement and commitment	Innovation	Employee and work	McMurray and Williams (2004)
Leader-member exchange	Communication relationship Clarification of role	Role clarity, affective commitment Autonomy	Employee	Brunetto et al. (2011)
Transformational and distributed	Clarity of vision and alignment of objectives	Not stated	Personal burnout, employee and work	Tomlinson (2012)

The NWI was developed initially as a 65 item scale as characteristics of the practice environment in Magnet hospitals in the US by Kramer and Hafner (1989) and has been used in multiple studies. The Revised Nursing Work Index (NWI-R) was developed reducing it to 55 items and three subscales were developed related to an environment supportive of professional nursing practice: autonomy, control over the work environment, and relationships with physicians (Aiken & Patrician, 2000). The PES-NWI was derived from the original 65 item NWI as a 31 item, five subscale index to link the nursing practice environment to nurse and patient outcomes. The PES-NWI has high reliability at both the individual and hospital levels and internal reliability with a Cronbach α >.7 (Lake, 2002). The five subscales are (i) nurse

participation in hospital affairs, (ii) nursing foundations for quality care, (iii) nurse manager ability

leadership and support of nurses, (iv) staffing and resource adequacy, and (v) collegial nurse-

physician relations. Table 4 includes questions from the three subscales related to leadership

as related to Simpson (2009) engagement constructs.

Table 4. Three subscales and related questions of the Practice Environment Scale of the Nursing Work
Index PES-NWI (Lake, 2002) as related to Simpson (2009) engagement constructs

Subscale	Questions	Simpson (2009) engagement constructs
Nurse Participation in Hospital Affairs subscale (9 items)	1. Staff nurses are involved in the internal governance of the hospital	Personal
	2. Opportunity for staff nurses to participate in policy decisions	Employee
	3. Opportunities for advancement	Personal
	4. Administration that listens and responds to employee concerns	Burnout / engagement
	5. A chief nursing officer who is highly visible and accessible to staff	Employee
	6. Career development/clinical ladder opportunity	Personal
	7. Nursing administrators consult with staff on daily problems and procedures	Employee
	8. Staff nurses have the opportunity to serve on hospital and nursing committees	Personal
	9. A chief nursing officer equal in power and authority to other top-level hospital executives	-
Nurse Manager Ability, Leadership, and Support of Nurses subscale (5 items)	1. A nurse manager who is a good manager and leader	-
	2. A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician	Burnout / engagement
	3. Supervisors use mistakes as learning opportunities, not criticism	All
	4. Supervisory staff that is supportive of the nurses	Personal
	5. Praise and recognition for a job well done	Personal and employee
Staffing and resource adequacy (4 items)	1. Enough staff to get the work done	All related to burnout / engagement
	2. Enough registered nurses to provide quality patient care	
	3. Adequate support services allow me to spend time with my patients	
	4. Enough time and opportunity to discuss patient care problems with other nurses	

Implicit in the PES-NWI is the contribution of the leadership process to shape the

nursing practice environment; however, the leadership input and the impact of the leadership on

engagement are not differentiated making it difficult to identify antecedents and consequences.

The items also do not all align to the same definition of engagement indicating that this tool is not suitable to measure engagement.

In this section the literature relating to leader engagement processes was reviewed and considered in the context of structure, process and outcomes of nursing leadership, and to which construct of engagement they related. However, whilst the engagement construct could be deduced from the research, these studies did not measure engagement. In the next section I will focus on literature where engagement has been measured.

Measuring engagement

Most organisations measure engagement in practice with the use of annual staff surveys which investigate commitment, engagement, and leadership; however, this method struggles to create links with organisational performance (McBain, 2007). Measurement of engagement is subjective and there are no specific measures of nurse manager engagement (Gray, 2012). A number of tools have been used in research to measure engagement in general, including a tool developed by May, Gilson, and Harter (2004), Maslach Burnout Inventory, the Utrecht Work Engagement Scale (UWES) (Schaufeli & Bakker, 2004) and the Gallup Workplace Audit (Harter, Schmidt, & Hayes, 2002). Table 5 (p. 34) demonstrates (a) the alignment between the four constructs of engagement and measurement tools (Simpson, 2009), (b) the relevant leadership subscales of the PES-NWI (Lake, 2002), (c) the application of the process of leadership, and (d) the outcome of this on the affect of the individual and the organisation (Simpson, 2009). May et al. (2004) developed an 81 item tool to explore engagement across three psychological conditions - meaningfulness, safety and availability - in a US Midwestern insurance company. Simpson (2009) suggested May et al.'s instrument assesses personal engagement. The Maslach Burnout Inventory (Abidin, Zalaquett, & Wood, 1997) measures burnout, the opposite of engagement (Schaufeli & Bakker, 2004), as a psychological condition characterised as emotional exhaustion, depersonalisation, and reduced personal accomplishment. The scale contains 22 items in three domains and was developed in service and health settings where there is a high potential for burnout. The UWES is a 9 item scale (UWES-9) developed by (Schaufeli et al., 2006) and constitutes the three factors of work engagement; vigour, dedication and absorption, and reflects work engagement Simpson (2009).

Finally, the Gallup Workplace audit is a proprietary tool in use across multiple industry settings in the US. The 12-item scale measures overall satisfaction developed by Harter et al. (2002) of the Gallup organisation.

Table 5 (p. 34) indicates that different applications of the leadership process reflect different types/constructs of engagement and impacts different elements of organisational performance. The alignment suggests that the PES-NWI may have potential to illuminate the process of leadership in the context of engagement. Understanding the complexity within this may be helpful to guide the leadership approach depending on the desired outcome.

The aim of this research is to identify modifiable factors to improve patient outcomes. These can be considered to be a form of service quality, or a marker of organisational performance. A measure used in the nursing context and which has been found as an antecedent of staff outcomes may also be able to predict patient outcomes. Simpson (2009) suggested using the definition of work engagement for use in the nursing context measured by the Schaufeli and Bakker (2003) UWES-9. In the next section I will explore the literature and findings where work engagement has been measured.

Table 5. Constructs and related measures of engagement (Simpson, 2009) and leadership subscales of the PES-NWI mapped against the Wong et al. (2013) engagement model

Engagement construct	Measure	Leadership application (PES-NWI)	Leadership Process	Outcome: individual affect	Outcome: organisational impact
(i) Personal engagement Kahn (1990)	Untitled tool (May et al., 2004)	Nurse participation in hospital affairs	• Meaningfulness • Safety • Availability	• Physically involved • Cognitively vigilant	• Performance quality • Systemic growth • Productivity
(ii) Engagement compared with burnout Maslach and Leiter (1997)	MBI	Nurse participation in hospital affairs Leader ability and support	• Nurse empowerment • Work environment • Leader empowering behaviour	• High energy, involvement and efficacy	• Perceptions of organisational change • Nurse outcomes • Adverse patient events • Commitment
(iii) Work engagement Schaufeli and Bakker (2003)	UWES	Staffing resource adequacy	• Organisational factors • Job resources • Control, reward, recognition and value fit	• Positive state of mind • Vigour • Dedication • Absorption	• Turnover intention • Organisational commitment • Service climate • Customer loyalty
(iv) Employee engagement Harter et al. (2002)	Gallup work place audit	Nurse participation in hospital affairs Elements of nursing foundations	• Clarity of expectations • Basic materials provided • Feeling that contribute to the organisation • Sense of belonging • Opportunities to discuss progress and goals	• Emotionally connected to others • Cognitively vigilant • Involvement and satisfaction	• Turnover • Customer satisfaction • Safety • (Unit level)
Simpson (2009)	Simpson (2009)	Lake (2002)	Mapping of findings of review by Simpson (2009) to Donabedian's taxonomy and definitions used by Wong et al. (2013)		

Notes: MBI = Maslach Burnout Inventory, PES-NWI = Practice Environment Scale of the Nursing Work Index, UWES = Utrecht Work Engagement Scale

Work engagement

Work engagement is defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption… a persistent and pervasive affective–cognitive state that is not focused on any particular object, event, individual, or behaviour"

(Schaufeli & Bakker, 2004, p. 295). A number of studies have measured work engagement; three relevant nursing studies were identified (Shacklock et al., 2013; Simpson, 2010; White et al., 2014). Shacklock et al. (2013) used SET as the theoretical framework, and investigated the mediating role of engagement of nurses, between the quality of the relationship between the supervisor and the staff member, perception of organisational support and intention to quit in five private hospitals in Australia. Both of these are antecedents of engagement. In a study in Northern Ireland investigating the impact of a quality improvement programme on engagement using the UWES, White et al. (2014) found a significantly higher work engagement in the group which had participated in the productive ward quality improvement programme. In the third study, a Core Nurse Resource Scale (CNRS) was developed to explore the relationship of practice environment to help identify workplaces at risk of disengagement to enable intervention to improve engagement and outcomes (Simpson, 2010). Although the study aimed to identify elements suitable for modification to improve outcomes, data were not collected or tested.

Three papers were identified which used the Schaufeli and Bakker (2003) UWES-9 and demonstrated the relationship between engagement and nurse perceived quality of care (Van Bogaert et al., 2012; Van Bogaert et al., 2013; Wong et al., 2010). Wong et al. (2010) used one item from the International Survey of Hospital Staffing and Organization of Patient Outcomes (Aiken et al., 2001), while the other two measured nurse reports of care on the last shift, on the unit, and by the multidisciplinary team (Van Bogaert et al., 2012; Van Bogaert et al., 2013). In these Belgium studies, the practice environment was measured using the Dutch translation of the NWI-R-vl (Aiken & Patrician, 2000). Features of the practice environment influenced dedication and vigour and, through absorption, affected perceived quality of care (Van Bogaert et al., 2012). All three characteristics of engagement were associated with nurse perceived quality of care. Nurse management at the unit level predicted the perception of the last shift's quality of care (Van Bogaert et al., 2013).

Five studies demonstrated the importance of engagement in the context of SET (Brunetto et al., 2014; Dasgupta, 2016; Saks, 2006; Shacklock et al., 2013; Trinchero et al., 2013). Three of these used POS, LMX and UWES-9 constructs (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013) (see Table 1, p. 25). In a study across a variety of jobs

and organisations, perceived organisational support and a study-specific scale measuring job and organisation engagement demonstrated that perceived organisational support predicted both job and organisation engagement (Saks, 2006). This demonstrates that there is a reciprocal element to the provision of organisational support and engagement. Saks (2006) suggested that there is more likelihood of trusting and high-quality relationships with their supervisor where staff are more engaged. Brunetto et al. (2014) used SET as their theoretical framework as nurses and police are two examples of high emotional labour occupations. They demonstrated that the quality of the relationship between the supervisor and the member, and their perception of organisational support predicts engagement and that employees more satisfied with the relationship, have higher levels of engagement. This was also the finding in a study in private hospitals in Australia (Shacklock et al., 2013).

The literature has identified that in a nursing context the UWES aligns with SET, and both POS and LMX are antecedents of work engagement (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013). A definition of quality and the rationale for focusing on quality as a dependent variable in this nursing research will be provided in the next section.

Quality of Care

Berwick (2013) described quality as "the degree to which a system of production meets (or exceeds) the needs and desires of the people it serves" (p. 11) and comprises three domains: safety, effectiveness, and patient experience. The contribution of nursing to providing quality care has gained attention internationally over the past two decades (Dubois, D'Amour, Pomey, et al., 2013).

Leadership shapes the antecedents of engagement, particularly organisational factors, structures, resources, and control (Simpson, 2009). However, little is known about the impact on patients. Six nursing studies were identified by Simpson (2009) and these predominantly related to burnout/engagement with one testing this relationship with employee perceptions of adverse events (Spence Laschinger & Leiter, 2006). As several studies had been identified which used forms of the NWI, the search was expanded to explore its use when measuring the impact of leadership on patient outcomes.

Nine studies were identified which used forms of the NWI to investigate relationships between the work environment and patient outcomes. Significant results were found in seven of the nine studies across a variety of outcomes. The samples sizes ranged from 40 to 33,659 nurses, and from single site studies (Armstrong & Laschinger, 2006) to 488 hospitals across 12 countries (Ausserhofer et al., 2014). The outcomes were primarily nurse reported and included nurse reported quality of care (Aiken et al., 2002; Kim, Capezuti, Boltz, & Fairchild, 2009; Spence Laschinger & Leiter, 2006), nurse reported nursing care left undone (Ausserhofer et al., 2014), nurse reported frequency of adverse events (Spence Laschinger & Leiter, 2006), and perception of patient safety culture (Armstrong & Laschinger, 2006). Two studies used outcomes from administrative data: Outcomes Potentially Sensitive to Nursing (OPSM) (Duffield et al., 2011) and 30-day mortality (Cummings, Midodzi, et al., 2010).

Nurse staffing was commonly associated with quality of care alongside leadership elements of the practice environment (Aiken et al., 2002; Ausserhofer et al., 2014; Duffield et al., 2011; Spence Laschinger & Leiter, 2006); although the focus was leadership support rather than engagement of nurses or leader engagement of frontline managers. The PES-NWI was used in four studies where significant results were found (Armstrong & Laschinger, 2006; Ausserhofer et al., 2014; Kim et al., 2009; Spence Laschinger & Leiter, 2006), whereas the NWI-R was used twice (Cummings, Midodzi, et al., 2010; Duffield et al., 2011) .

In a small exploratory study of 40 nurses in a community hospital in Canada, strong relationships were identified between structural empowerment, Magnet hospital characteristics, and patient safety culture (Armstrong & Laschinger, 2006). However generalisation of this study is limited by the sample size as there may be something specific to the location or clinical setting influencing the results (Hinton, 2004).

Ausserhofer et al. (2014) found that care was left undone less frequently in hospitals with (a) more favourable work environments, (b) lower nurse to patient ratios, and (c) lower proportions of nurses undertaking non-nursing tasks. A revised version of the Practice Environment Scale of the NWI (PES-NWI) was used to survey all nurses working in 488 hospitals in 12 European countries. The mean scores were used to create a composite

measure. The 32 questions included nurse manager ability, leadership, participation in hospital affairs, and nurse foundations for quality of care.

Kim et al. (2009) determined in a study of 192 registered nurses in New York that there was a significant relationship between nurse participation in hospital affairs and nurse rated quality of geriatric care. This again is a relatively small study; however, it indicates that further research investigating the relationship of nurse participation in hospital affairs with actual nurse-sensitive outcomes would be beneficial. Spence Laschinger and Leiter (2006) measured the impact of work life and burnout on patient outcomes using the PES-NWI, the Maslach Burnout Inventory-Human Service Scale, and nursing reports of the frequency of occurrence of specific adverse events within the previous year. They demonstrated that nursing leadership and staffing adequacy impacted patient outcomes. However the impact of leadership on engagement of nurses in their work and the importance of burnout was the focus of the analysis. There was a moderate negative correlation ($r = -.23$) between leadership and nurse reported adverse events (patient complaints, nosocomial infections, patient falls, and medication errors); however, this was not directly articulated. The study tested interrelationships within the model and used nurse reported, not actual outcomes.

In the longitudinal, retrospective, concurrent cross-sectional study by Duffield et al. (2011), data for five years of 27 hospitals and unit level data from one overlapping year of 43 units of 19 hospitals used the NWI-R and a nurse survey which included measurement of leadership, work environment, and perceptions of quality of care. Quality was measured by looking at audit and institutional data from the adverse event reporting system of falls, medication errors, and medication administration that was given 30 minutes after the due time. It was noted in the discussion that where leadership was considered inadequate, care deteriorated, however this was not presented in the findings. Duffield et al. (2011) concluded that future research investigating "the qualities of leadership and management that make a unit "work"; and patient outcomes would be profitable" (p. 253).

Lower 30-day mortality was related to higher nurse reported quality of care but lower nurse reported adequacy of managerial support and higher burnout in a study of all employed nurses in Ontario Canada (Tourangeau et al., 2007). Nurse manager ability was measured

using the related 4-item subscale of the NWI-R, and burnout was measured using 9-item
Maslach Burnout Inventory.

The use of the PES-NWI has generated a body of knowledge to inform a global review
of its use by Warshawsky and Havens (2011). Of the 37 articles identified, 16 investigated the
associations between PES-NWI and patient outcomes. Seven of these studies were identified
as relevant to the scope of acute hospital adult non specialist units and had significant
associations (Aiken et al., 2008; Kim et al., 2009; Kutney-Lee et al., 2009; McCusker,
Dendukuri, Cardinal, Laplante, & Bambonye, 2004; Patrician, Shang, & Lake, 2010; Spence
Laschinger, 2008; Spence Laschinger & Leiter, 2006). Six of these measured nurse rated
quality of care rather than actual patient outcomes (Aiken et al., 2008; Kim et al., 2009; Kutney-
Lee et al., 2009; McCusker et al., 2004; Patrician, Shang, et al., 2010; Spence Laschinger,
2008; Spence Laschinger & Leiter, 2006). Only one measured actual outcomes and reported a
significant relationship between 'nurse manager ability and support' and 'failure to rescue' and
30-day mortality (Aiken et al., 2008).

The characteristics of high performing organisations with relationships to improved
patient outcomes have been found to include organisational support (Aiken et al., 2002), access
to support (Armstrong & Laschinger, 2006), leadership (Cummings, Midodzi, et al., 2010;
Spence Laschinger, 2008; Spence Laschinger & Leiter, 2006), nurse participation in hospital
affairs (Kim et al., 2009), nurse manager ability (McCusker et al., 2004), and favourable practice
environment (Kutney-Lee et al., 2009). The application of leadership influences the quality of
the leader-member relationship (Squires et al., 2010) which is an antecedent of engagement
(Shacklock et al., 2013). In addition, this has been demonstrated to create the conditions (POS)
for, or antecedents of, work engagement (Shacklock et al., 2013). However the impact of
engagement, relationships, and leadership for patients has not been measured. Results
demonstrate that leadership, workplace relationships, at an individual and organisational level
and engagement are likely to be replicated to predict the perceptions of unit care quality
provided (see Figure 5, p. 40).
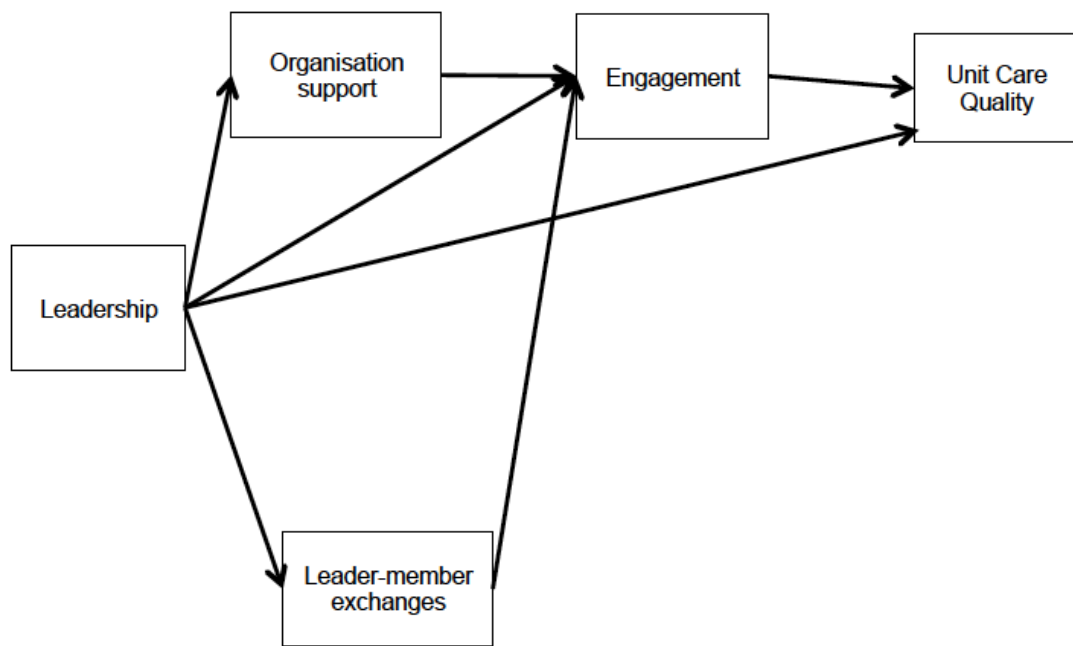
Figure 5. The relationship of leadership, workplace relationships and work engagement to perceptions of unit care quality

In the next section I will explore the measurement of the quality of nursing care and approaches to understanding the quality of nursing care prior to focusing on the three domains of quality (Berwick, 2013); patient safety, clinical effectiveness, and patient experience; and how these relate to measuring nursing care.

Measuring nursing care

The aim of the research is to explore real world problems for nurse leaders and, therefore, use data that reflects the contribution of nurses to quality care and are readily available. In this section I explore literature relating to nurse-sensitive indicators, outcomes potentially sensitive to nursing, and nurse-sensitive measures of the three domains of quality (Berwick, 2013); patient safety, clinical effectiveness, and patient experience. Literature will be explored where there is reference to nurse reported perceptions of quality of care.

Issues with respect to the evaluation of nursing care were articulated as early as 1969 within the 'structure', 'process' 'outcome' categories described by Donabedian (1969). In relation to nursing practice, structural elements are those available to deliver care; process is the delivery of care itself; and outcome is the impact of care delivery in terms of the end result

(Donabedian, 1969). Based on Donabedian's SPO model, Dubois, D'Amour, Pomey, et al. (2013) articulated structure as the acquisition, deployment, and maintenance of nursing resource; process as the transformation of resource into nursing service, and outcome as the change in the patient's condition as a result of the nursing service (see Table 6, p. 42).

Nurse-sensitive indicators. Nursing's contribution is commonly measured by nurse-sensitive indicators (Dubois, D'Amour, Pomey, et al., 2013) or outcomes potentially sensitive to nursing (Carryer et al., 2010; McCloskey & Diers, 2005; Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002). The Collaborative Alliance for Nursing Outcomes (CALNOC) in the US has been collecting nurse-sensitive indicators to drive improvement since 1996 (Donaldson, Storer Brown, et al., 2005). Dubois, D'Amour, Pomey, et al. (2013, p. 2) noted influential organisations have considered indicators of nursing contribution including the Agency for Healthcare Research and Quality and the National Quality Forum in the US, the Ontario Hospital Association in Canada, and the Council on Health Care Standards in Australia.

In 2005, a Commission of Inquiry into Safe Staffing and Healthy workplaces in New Zealand recommended the use of a nationally agreed set of nursing metrics to achieve greater recognition of the impact of nurse staffing on quality of nursing care, but this has not occurred. In England, Griffiths et al. (2008) suggested nursing metrics could help NHS organisations at all levels understand the contribution of nursing to quality and guide decision making for hospital managers and patients. Metrics must be important to the public, available and reflect the contribution of nursing to safety, effectiveness and compassion (Griffiths et al., 2008). They also suggested that falls and pressure injuries data should be collected and reported in regional and national benchmarking (Griffiths et al., 2008). This has now occurred with the introduction of the safety thermometer in England in 2012, comprising falls, pressure injuries, and urinary catheter related infection (Department of Health, 2012). Patient falls, pressure ulcers, pain, nausea, dyspnoea, physical functioning, patient satisfaction, and complaints were identified in a systematic review as the most commonly cited nurse-sensitive outcomes (Dubois, D'Amour, Pomey, et al., 2013).

Outcomes potentially sensitive to nursing. Outcomes potentially sensitive to nursing (OPSN) (Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2001) were used to articulate

the relationship between New Zealand health policy changes to the structure of the nursing workforce and the impact on and patient outcomes (see Table 6, p. 42) (Carryer et al., 2010; McCloskey & Diers, 2005). The OPSN included 20 adverse events (see Table 6) which are derived from coded data. Table 6 demonstrates nurse-sensitive measures using the SPO taxonomy. Sources of the data vary; however, the structural and OPSN data are generally available from administrative sources. The delivery of nursing care is hard to measure as it is gathered manually by observation or audit. The OPSN also reflects indicators which although are noted to be nurse-sensitive, are not generally used in practice by nurse leaders. As this research is aiming to identify practical approaches to understand antecedents of patient outcomes, the use of more practically available methods to measure nursing quality in the domains of patient safety, clinical effectiveness and patient experience will be explored in the next section.

Table 6. Examples of nurse-sensitive measures using structure, process, and outcome taxonomy

	Structure	Process	OPSN Outcomes
Example indicators	Absenteeism Education Organisation of care Nursing work index Nurse experience Turnover Temporary staff	Assessment, problem identification, planning, intervention, and evaluation	Urinary tract infection (UTI); decubitus; hospital-acquired pneumonia; deep vein thrombosis/ pulmonary embolism (DVT/PE); ulcer/gastrointestinal tract bleeding (UGI bleed); central nervous system complications (e.g., syncope, confusion-CNS); sepsis; shock/cardiac arrest; surgical wound infection; pulmonary failure; physiological/ metabolic derangement (e.g., hypovolemia).
Source of data	Administrative records	Observation or audit	Coded data
Reference	Needleman et al. (2002, pp. 34S and 15S) Carryer et al. (2010, p. 278)		Carryer et al. (2010, p. 278)

Note. Adapted from *Donabedian (1969)*

Patient safety

The literature demonstrates a growing interest in patient safety in the context of leadership and staffing. As previously noted, leadership has been related to patient outcomes, specifically 30-

day mortality (Cummings, Midodzi, et al., 2010), medication errors, and pneumonia (Capuano et al., 2005). Other patient safety measures cited in the literature were medication errors (Paquet et al., 2013; Vogus & Sutcliffe, 2007), falls (Capuano et al., 2005; Duffield et al., 2011), and pressure injuries (Duffield et al., 2011; Squires et al., 2010). Thirty-day mortality was also used to investigate relationships between staffing and patient outcomes (Aiken et al., 2008). He, Staggs, Bergquist-Beringer, and Dunton (2016) used the National Database for Nursing Quality Indicators (NDNQI) and Donaldson, Bolton, et al. (2005) used CALNOC data to investigate relationships between nurse staffing and patient outcomes using indicators for falls (per 1000 bed days) and pressure injuries (%). Nurse staffing have also been investigated in relation to patient safety using coded International Classification of Disease (ICD) administrative data of the incidence of pressure injuries and falls (per 1000 bed days) (Boyle, 2004). Dubois, D'amour, Tchouaket, et al. (2013) also accessed medical records to gather information about six patient safety outcomes including falls and pressure injuries in relation to staffing. Duffield et al. (2011) gathered OPSN data using Australian and New Zealand ICD-9 codes and patient records to capture falls and medication errors. Cummings, Midodzi, et al. (2010) demonstrated that high resonant leadership was significantly related to lower mortality, and Squires et al. (2010) demonstrated a significant path from resonant leadership to reduced nurse reported frequency of exposure to medication error.

This research needs to identify nurse-sensitive patient safety indicators which are readily available. Mortality and ICD codes are not used in the context of understanding the quality of nursing practice in New Zealand. The NDNQI and CALNOC databases are examples of nursing quality captured as part of practice in the US; however, such a process does not exist in New Zealand. Falls and pressure injuries are reported as adverse events in practice at the selected New Zealand study DHB, and are recognised as indicators likely to be influenced by nurses (Dubois, D'Amour, Pomey, et al., 2013; McCloskey & Diers, 2005). These indicators are therefore suitable to be selected and their use is consistent with existing literature (Capuano et al., 2005; Dubois, D'amour, Tchouaket, et al., 2013; Duffield et al., 2011). Nurse reported outcomes and quality of care will be explored in the next section.

Nurse reported outcomes and unit care quality. Perceptions of unit care quality (Lake, 2002) is often used to understand quality of care. This may be due to the significant challenges of evaluating nursing care due to the laborious nature of identifying and measuring nurse-sensitive measures which persist 49 years after Donabedian highlighted them (Parr et al., 2018).

No correlation was found between staff perception of the quality of their care when responding to the NHS staff survey and hospital standardised mortality rates when analysed at institutional level (Pinder et al., 2013). However, subjective data from nurses about their perceptions of quality of care have been captured by a number of researchers to demonstrate the relationship between engagement and outcomes (Van Bogaert et al., 2012; Van Bogaert et al., 2013; Wong et al., 2010), leadership (Squires et al., 2010; Wong et al., 2010), and workplace relationships or practice environment (Aiken et al., 2002; Aiken et al., 2008; Van Bogaert, Clarke, Roelant, Meulemans, & Van de Heyning, 2010; Van Bogaert, Clarke, Vermeyen, Meulemans, & Van de Heyning, 2009; Van Bogaert et al., 2013).Three survey questions (Lake, 2002) have been used to understand the perception of quality of care on the unit, the last shift, and either patient readiness for discharge, or perception of quality over the past year (Aiken et al., 2002; Aiken et al., 2008; Van Bogaert, Meulemans, et al., 2009). More frequently, one question is used; the nurse's perception of quality of care on the unit (Kutney-Lee et al., 2009; Patrician, Loan, McCarthy, Brosch, & Davey, 2010; Purdy, Spence Laschinger, Finegan, Kerr, & Olivera, 2010; Spence Laschinger, 2008; Van Bogaert et al., 2010; Wong et al., 2010). In the literature, a variety of titles have been used to measure perceptions of unit care quality using this scale, including:

- Nurse reports of quality of hospital care (Aiken et al., 2002);
- Nurse assessed quality of care (Van Bogaert et al., 2012); and
- Perceptions of unit care quality (Wong et al., 2010).

Several studies have also asked nurses to report the frequency to which they have been exposed to adverse events such as falls and nosocomial acquired infection (Kutney-Lee et al., 2009; Wong et al., 2015), pressure injuries and medication error (Squires et al., 2010), and falls (Purdy et al., 2010). Two studies have been identified where engagement demonstrated positive effects on perceptions of unit care quality (Van Bogaert et al., 2013; Wong et al., 2010).

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It is therefore likely that the level of engagement will predict their perception of quality of care (see Figure 6).

A significant correlation was found between nurse reported quality of care and nurse reported falls and patient satisfaction (Purdy et al., 2010). Several paths have not previously been explored, however, from a nursing practice perspective, if nurses perceive the quality of care to be good, it would be reasonable to expect an associated lower rate of patient harm such as falls and pressure injuries. This reduced rate of harm could reasonably be expected to be associated with fewer complaints about care and a higher satisfaction about the overall experience.

Likewise if engagement is higher, you could expect higher perceptions of unit care quality (Van Bogaert et al., 2013; Wong et al., 2010), it would also be reasonable to expect there to be a lower rate of patient harm such as falls and pressure injuries. Falls are theorised to be the first variable as in practice this patient harm is more prevalent. Pressure injuries are more likely in less mobile people.
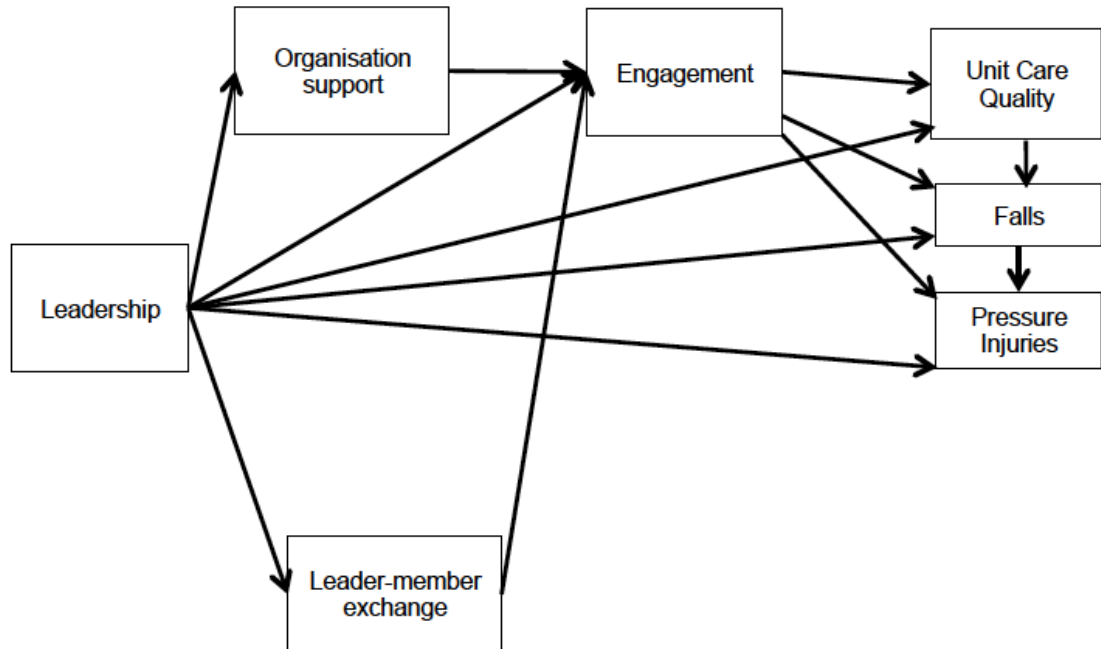
Figure 6. Relationship of leadership, relationships, perceptions of unit care quality and patient safety mediated by engagement

Given the state of the evidence, it is theoretically reasonable to expect that relationships between resonant leadership and perceptions of unit care quality and other nurse-sensitive

outcomes like falls and pressure injuries are likely to be replicated and mediated by engagement (see Figure 6, p. 45). In the next section I will explore clinical effectiveness from a nursing perspective focusing on composite measures of nursing quality.

Clinical effectiveness

In the UK, a composite quality score has been used on 1,111 wards for the past 25 years (Hurst 2011) which includes 135 standards in conjunction with occupancy, casual staffing usage, and staffing absences (sickness and vacancies). Data collection involves observing care, speaking to patients, relatives and staff, reviewing nursing documentation and inspecting the ward environment (Hurst, 2005). This approach is essentially bottom-up, where frontline staff undertake the data collection, a process which requires the existence of elements of engagement such as, valuing clinical nurses, and participation in the process (Redfern & Norman, 1990).

Fundamental care. A growing concern internationally is the challenge to demonstrate that the person-centred fundamental aspects of caring are provided. Research into this area is emerging. Care components were identified which describe fundamental aspects of care and incorporate self-care, environmental, and physiological dimensions (Kitson et al., 2010). These have further been refined to comprise 14 elements and dimensions of physical, psychosocial, and relational, and were used to evaluate stroke patients experiences of fundamental care (Kitson & Muntlin Athlin, 2013). Measurement of these fundamental aspects of care are challenging in quantitative research, and require methods such as non-participant observation of nursing practice against a set of standards, as used by Hurst (2005).

Parr et al. (2018) described the development of an evaluation and improvement programme of FOC in New Zealand. These were called Patient and Whānau Centered Care Standards (PWCCS) and defined as "the fundamental aspects of care which the District Health Board considered all patients should expect to receive, and all healthcare professionals should be able to provide" (Parr et al., 2018, p. 5). More recently a working definition of fundamental care has been derived through a modified Delphi study where

> fundamental care involves actions on the part of the nurse that respect and focus on a person's essential needs to ensure their physical and psychosocial wellbeing. These

needs are met by developing a positive and trusting relationship with the person being cared for as well as their family/carer (Feo et al., 2017, p. 11).

For the purpose of this research, Patient and Whānau Centered Care Standards will be referred to as FOC. The nine FOC standards are measured by four methods including patient interviews, ward observation, a ward management interview, and gathering nursing audit results. The results were presented as a composite overall unit level percentage result, for each standard, part and by individual questions. Measurement of the FOC provides insight into degree of patient participation and involvement, the relationship between the patient and the nurse and context where care is delivered (Jeffs et al., 2016). It also incorporated a combination of nurse-sensitive indicators within SPO categories (Donabedian, 1969; Dubois, D'Amour, Pomey, et al., 2013), patient safety, clinical effectiveness, and patient experience (Berwick, 2013), and aspects of observation of care and the environment (Hurst, 2011). FOC are measured in practice at the DHB selected for the study. The FOC have been demonstrated to be influenced by improvements in unit management related to an observation, rather than measurement of engagement with the FOC programme (Parr et al., 2018). If nurses are more engaged and perceive the quality of care to be higher (Van Bogaert et al., 2013; Wong et al., 2010), and there is less patient harm, you could also expect FOC to be higher. The inclusion of FOC will extend the existing literature by exploring these relationships within the context of SET and resonant leadership.

The literature demonstrates that it is theoretically reasonable to expect that relationships between resonant leadership and FOC are likely and mediated by engagement (see Figure 7, p. 48).
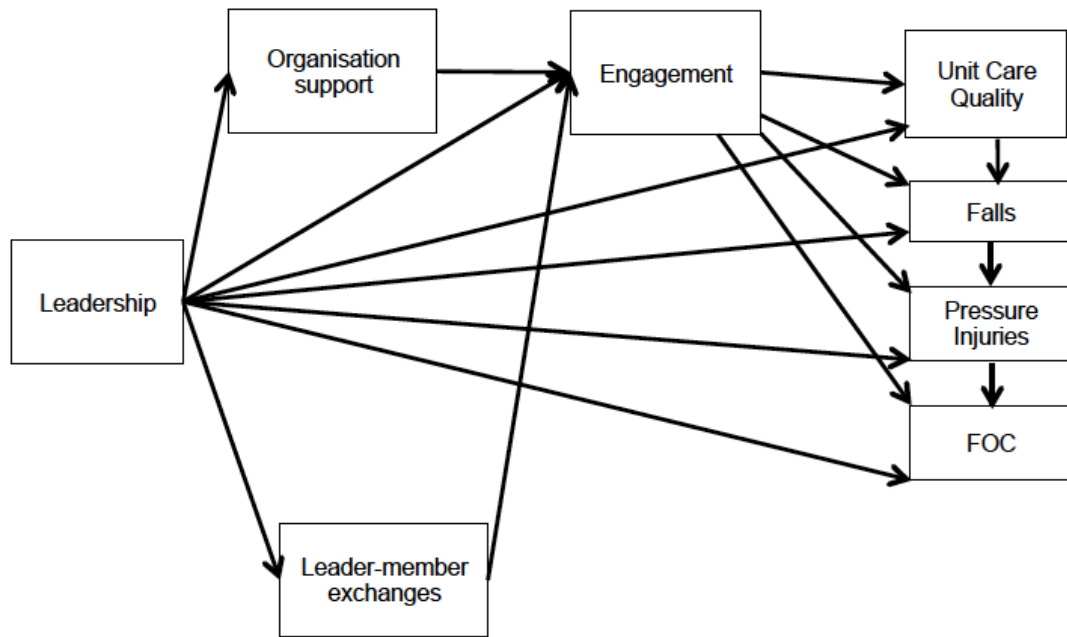
Figure 7. Relationship of leadership, relationships, engagement, perceptions of unit care quality, patient outcomes and fundamentals of care

Patient experience: Patient perceptions and satisfaction

Definitions of patient experience were found in a synthesis of 18 articles, and five common themes were identified: (i) emotional and physical lived experience (8 occasions), (ii) personal interactions (7), (iii) spanning across the continuum (5), (iv) shaped by the organisation/culture (5), and (v) importance of partnership/patients involvement (Wolf, Niederhauser, Marshburn, & LaVela, 2014). This reflects the nature of patient experience as enduring, informed by the quality of the relationships, interactions, and resulting partnerships. Patient experience is said to comprise a number of components: patient satisfaction, patient perception, patient engagement, patient participation, and patient preferences (LaVela & Gallan, 2014). Complaints may be seen as an outcome of patient perceptions as have been described as a "social process of calling a hospital to account for violation of the complainant's normative expectations" (Lloyd-Bostock & Mulcahy, 1994, p. 124).

Measures of patient satisfaction and complaints are widely acknowledged to be examples of nurse-sensitive outcome indicators (Dubois, D'Amour, Pomey, et al., 2013; Needleman et al., 2007) as they detect changes in a patient's condition (Dubois, D'Amour, Pomey, et al., 2013). McCance et al. (2012) identified eight priority measures through a consensus process including consumers which reflect the need to demonstrate patient centred

care. Seven of these can be mapped against their person-centred nursing framework which includes pre-requisites, care environment, care process and outcomes. The outcome key performance measure chosen by the stakeholders was 'the patient's sense of safety' (McCance et al., 2012).

A variety of indicators exist in practice to measure patient experience (Coulter, Fitzpatrick, & Cornwall, 2009; HQSC, 2014a; LaVela & Gallan, 2014). Gathering the breadth of patients' experience, particularly patient engagement, patient participation, and patient preferences is, however, challenging. Use of patient experience data in related research is limited. Purdy et al. (2010) used both nurse-reported occurrence of complaints and surveyed patients about their satisfaction with nursing care. Spence Laschinger and Leiter (2006) used a single factor of nurse reported exposure to adverse events including patient complaints, nosocomial infections, patient falls, and medication errors. Parr et al. (2018) used study specific patient experience questions when evaluating the delivery of fundamental aspects of care and demonstrated improvement in patient experience over 18 months.

In New Zealand, in order to have a consistent approach to understanding the quality of patient experience, the HQSC (2014a) introduced a quarterly patient experience survey. However these results are not available at unit level. Patient satisfaction can also be a driver for loyalty and re-patronage (LaVela & Gallan, 2014) which was one reason the NHS selected the Friends and Family Test as it is a patient satisfaction measure (NHS England, 2014). This was first reported in July 2013. The test asks the question "How likely are you to recommend our ward to friends and family if they needed similar care or treatment?" (Department of Health, 2013). The measure was introduced at the DHB in June 2013 and has been gathering data to inform quality improvement plans at unit level (Waitemata District Health Board, 2014).

Both complaints and the Friends and Family Test are also collected in practice at the DHB. The use of both of these indicators from institutional data in research is relatively exploratory; however provide an opportunity to understand the role that nursing leadership, relationships, and engagement have on all the components of quality. It is also relevant to explore patient experience within a SET perspective given the relational components of experience. Friends and Family Test would be the final outcome in the context of social

exchange. For example, if people have cause to complain this would be likely to negatively influence their degree of satisfaction. Likewise if they had experienced an adverse event, like a fall or pressure injury, this would be likely to negatively influence their degree of satisfaction. It is theoretically reasonable to expect that relationships between resonant leadership and patient satisfaction and patient perceptions of care are likely to be found and mediated by engagement (see Figure 8) as social exchanges emerge.
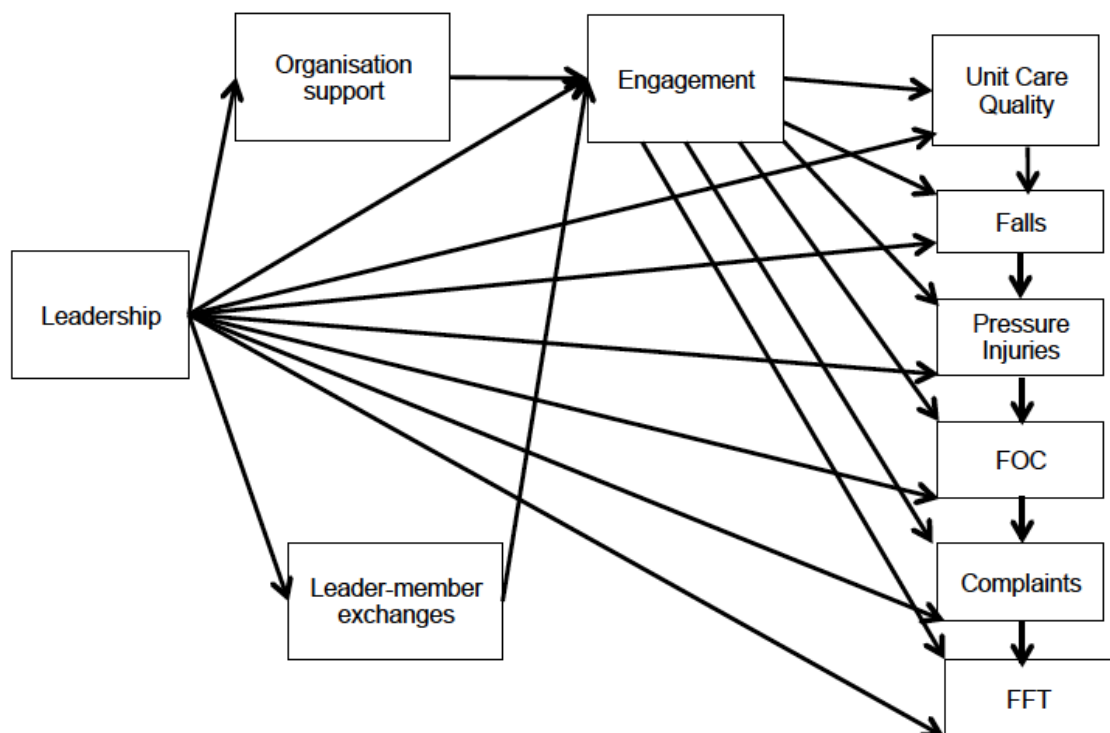
Figure 8. Relationship of leadership, relationships, engagement, nurse reported quality, patient safety, clinical effectiveness and patient experience

Social exchange theory suggests exchanges between the leader and the staff member result in reciprocity. This may take the form of greater investment in patient safety prevention practice, such as involving patients and sharing information to keep them safe. It may reflect social exchanges where 'mutual investment' emerges between staff and patients, and may also become moral and group norms of practice. The lower rates of patient harm, and higher patient satisfaction would reflect reciprocated, concrete, and tangible socio-emotional exchange resources.

In the next section I will explore SET and related research.

Theoretical Perspective

      Social Exchange Theory

SET is a useful lens to investigate and illuminate workplace relationships (Cropanzano & Mitchell, 2005). Moreover, it has been found useful as a framework in nursing research due to the highly emotional nature of the nursing profession (Brunetto et al., 2014). The constructs of organisational support, relationship quality, and engagement are directly relevant to the focus of this research, and SET has also been used in combination with leadership style and outcomes (Squires et al., 2010).

      Within SET, interactions lead to obligations which are interdependent and contingent on one another, with the potential to develop high-quality relationships (Cropanzano & Mitchell, 2005). The 'exchange' is fundamental to SET as bi-directional between two parties and includes (a) rules and norms of exchange, (b) resources exchanged, and (c) emerging relationships (Cropanzano & Mitchell, 2005, p. 875). Interdependence is characterised by "mutual and complementary arrangements" (Cropanzano & Mitchell, 2005, p. 876). By obeying rules over time, relationships evolve into trusting, loyal, and mutual commitments. Rules of exchange may involve reciprocity or negotiation. Reciprocity is not explicitly negotiated, but understood and contingent on behaviour, may reflect cultural expectations such as expected behaviour, or a norm/individual orientation. Reciprocal exchanges generate better work relationships than negotiated, permitting more trust of, and commitment to, each other. In a nursing context, a registered nurse who takes a leading role on a specific subject matter within a ward environment, such as a link-nurse for falls prevention, is an example of a negotiated responsibility, which is a social exchange rather than a contractual one.

      Cropanzano and Mitchell (2005) identified six types of resources that can be exchanged; love, status, information, money, goods, and services. Among the six resources, three have recognisable relevance for nursing: status, information, and goods and services. In the example above, the nurse takes a leading role for the reduction of falls as the 'falls champion' (status). The unit manager may allocate the nurse time to perform the task (goods and services). The nurse attends sessions with the nurse leaders and other champions, and

attends external sessions with the national and regional networks (information). The nurse generates an expertise based on the knowledge gained and bring this back to the ward team, thus providing them with status and information and the potential for improved service to patients on the ward. Much of the quality improvement work in wards is reliant on such exchanges and demonstrates mutual investment in the exchange.

The core competencies of resonant leadership; being visionary, coaching, affiliative, and democratic (Goleman et al., 2002), are all examples of rules and norms of exchange. Being affiliative involves building relationships (Goleman et al., 2002) which requires the investment of relational energy (Cummings, 2004). This reflects interactions which lead to obligations which are interdependent and contingent on each other. Visionary and democratic behaviour of the resonant leader lead to staff feeling more valued as a moral norm and folk belief (Bailey, Madden, Alfes, & Fletcher, 2017; Goleman et al., 2002).

Exchange resources are generated through mutual investment (Saks, 2006). Examples of resonant leadership competencies include development through coaching, information sharing through visionary practice, and building relationships through affiliative behaviour (Goleman et al., 2002). This leads to emerging social exchanges and has resulted in positive associations between POS and LMX in relation to organisation commitment and job performance (Saks, 2006).

Cropanzano and Mitchell (2005) described a model for the relationship between POS and the LMX or the quality of the relationship. Within this, it is important to consider all the domains of leadership which include the leader, the follower and the relationship (Graen & Uhl-Bien, 1995). SET recognises the importance of the quality of the relationship between the leader and member as the basis of the social exchange as individuals return benefits they receive and are likely to match these to the person with whom they have a social exchange relationship (Cropanzano & Mitchell, 2005). In nursing research, measurement of the quality of the leader-member relationship has demonstrated that resonant leadership is associated with the quality of the relationship (correlation coefficient 0.52, pathways significant at $p < 0.05$) (Squires et al., 2010). The quality of the relationship affects unit level psychological empowerment and organisational commitment (Laschinger, Finegan, & Wilk, 2009), and

exchange relationships are an antecedent of engagement (t-statistic = 2.57, significant at p < .01) (Shacklock et al., 2013). Resonant leadership as a relational leadership style will, therefore, be considered in more detail as will the quality of the LMX relationship. LMX is a unique leadership theory as it focuses on the two-way (dyadic) relationship between the leader and subordinate rather than the personal characteristics of the leader, the situation, or the interplay (Gerstner & Day, 1997).

Practice environment aspects are also considered within SET, in relation to POS, or the degree to which the employee perceives the organisation cares about his/her wellbeing and values his/her contribution (Eisenberger et al., 1997). An employee who perceives his/her employer is supportive is more likely to reciprocate (Cropanzano & Mitchell, 2005). Research has demonstrated through regression analysis that organisational support predicts job engagement (B coefficient, 0.36, p <0.01) (Saks, 2006) and in nursing, is an antecedent for many outcomes including engagement (t-statistic = 8.97, p < 0.001) (Shacklock et al., 2013).

SET provides a relational frame to consider patient experience and the reciprocal nature of engagement between staff and patients and families (Saks, 2006). That is, interactions between patients/family and staff lead to obligations, which are interdependent and contingent on each other and may be of high or low quality (Cropanzano & Mitchell, 2005). As patient experience is effectively relational, there is a strong fit with considering these measures within research with SET as the theoretical basis.

The interdependent nature of social exchanges may help to explain a relationship between resonant leadership and perceptions of unit care quality, patient safety, and patient experience. Leader-member interactions may lead to obligations to reciprocate by adopting a local folk belief about the quality of care, exchanging nursing services and building relationships with patients as mutual investment develops (Cropanzano & Mitchell, 2005).

SET is a useful theory to underpin this research and previous research has demonstrated that the quality of the exchange (POS) is related to organisational commitment and turnover intentions, while the quality of the relationship (LMX) as the basis of the exchange has predicted job satisfaction and performance. These are important constructs that explain the nature of reciprocity, predict engagement and are relevant in the nursing context. In the

following sections the research gaps are summarised and the hypotheses introduced. Each of the variables is defined and the a-priori model is proposed.

Relevance of SET to the New Zealand health context

There is an inherent importance of partnership and relationships in Māori culture, which flows into the New Zealand culture and health context due to Māori being the indigenous people of the land and confirmed in the Treaty of Waitangi (Came et al., 2018). New Zealand is a bicultural society comprising Māori the indigenous people and all others grouped as non-Māori. Pakeha is the Māori collective word for all non-Māori ethnicities.

In a traditional Māori approach to health, wairua (spiritual), the role of the family, and hinengaro (the mind) are as important as physical appearance of illness (Durie, 1985). In Māori health systems, such as Whānau Ora, the nurse works with families and communities building reciprocal relationships for the betterment of health, rather than focusing on individual health needs (Winiata, 2012).

Nurses who care for Māori become whanaunga (translated very broadly as kin) during a period of illness by the association of that care (Walker, 2015). However, Māori are recognised as having a shorter length of stay, marginally worse care (Davis et al., 2006), and have been shown to experience higher rates of pressure injuries, urinary tract infection, and pneumonia (Wilson et al., 2010). This may be because the current health delivery model does not address the cultural safety needs of Māori (Slater et al., 2016) and highlights the importance relationships and exchange relationships play in the delivery of healthcare in New Zealand.

Mana, as a Māori leadership style described by Winiata (2012), implies a reciprocity between the leader, who inspires, motivates, and mobilises people based on Tikanga Māori (values and protocol) and receives follower loyalty. It embodies the relationship between the leader with chiefly authority, and his/her people demonstrating follower loyalty, with the ability to motivate and inspire (Winiata, 2012). Although research is limited, Māori nurses have been described as feeling marginalised and subject to more criticism and scrutiny than their peers (Walker, 2015), which may negatively impact achievement of Ministry of Health (2015) national targets to increase the proportion of Māori working in health professions.

The concepts of relational competence and fundamentals of care are values of importance to Māori and Pacific people. Given a cultural expectation of leadership as a reciprocal relationship, it is reasonable for nurse leaders to be motivated to identify modifiable factors which not only would improve care for Māori, but may also provide Māori nurses with more support and support retention.

Research Gaps in Social Relationships

The literature review has provided an understanding of the state of the research related to the effects of leadership style (resonant/dissonant), unit level supervisor/subordinate relationships, and POS on engagement and unit level patient outcomes. Leadership has predominantly been demonstrated to influence staff outcomes such as staff satisfaction, staff health and wellbeing, work environment, productivity and effectiveness (Cummings, MacGregor, et al., 2010a). Goleman et al. (2002) suggested leadership as a combination of feeling and thought, where leaders who provide positive emotions are resonant and this amplifies the emotional impact, while those producing negative emotions are dissonant. Leadership has been shown to have a positive effect on patient outcomes particularly resonant leadership (Cummings, Midodzi, et al., 2010; Squires et al., 2010), authentic leadership (Wong et al., 2010), and transformational leadership (Houser, 2003) styles, trust in manager (Vogus & Sutcliffe, 2007) and service climate (Abdelhadi & Drach-Zahavy, 2012), which are influenced by leadership style. SET was also used as the theoretical perspective (Squires et al., 2010).

Resonant leadership styles are described as visionary, coaching, affiliative, and democratic (Cummings et al., 2005). Resonant leadership has been shown to have importance for leader-nurse relationships (Squires et al., 2010), reduced 30-day mortality (Cummings, Midodzi, et al., 2010), greater perceptions of support ($\beta = 0.28$, $p < 0.05$) and engaging work ($\beta = 0.16$, $p < 0.05$) (Wagner et al., 2013), workplace empowerment ($\beta = 0.47$, $p < 0.05$) and job satisfaction ($\beta = 0.16$, $p < 0.05$) (Spence Laschinger et al., 2014). Resonant leadership is an emerging area of research; however, relationships between resonant leadership, exchange relationships, engagement and quality of care, have not been investigated nor within a social exchange perspective.

Relationships are a fundamental mechanism in the interplay between leadership and engagement. The quality of the leader-nurse relationship is evidenced to be predicted by resonant leadership (Squires et al., 2010). The work environment has been investigated in the context of patient outcomes (Aiken et al., 2002; Aiken et al., 2008; Ausserhofer et al., 2014; Duffield et al., 2011; Patrician, Shang, et al., 2010; Van Bogaert et al., 2010; Van Bogaert, Meulemans, et al., 2009) and engagement (Spence Laschinger & Leiter, 2006; Trinchero et al., 2013; Van Bogaert et al., 2012; Van Bogaert et al., 2013), but not in research involving leadership styles. The individual roles that the quality of the relationship with the organisation and the quality of the relationship between the leader and the nurse play as antecedents of engagement (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013) and nurse perceived quality of care (Van Bogaert et al., 2012; Van Bogaert et al., 2013; Wong et al., 2010) have also been highlighted. SET has been demonstrated as a useful perspective when investigating work relationships (Brunetto et al., 2014; Dasgupta, 2016; Saks, 2006; Shacklock et al., 2013; Squires et al., 2010; Trinchero et al., 2013). What is not evident is the importance of these constructs in relation to leadership as an antecedent and the relationships with work engagement and patient outcomes as dependent variables.

Across the literature, there appears to be consistency in the importance of including SPO indicators (Dubois, D'Amour, Pomey, et al., 2013), and including subjective and objective data sources, when considering the contribution of nursing to quality health care. Although the literature confirms the use of quality related measures, the use of readily available data gathered through the process of care delivery and evaluation is limited. The use of falls and pressure injuries data are more prevalent than patient satisfaction or complaints. Patient outcome indicators have been used for falls (per 1000 bed days) and pressure injuries (%) (He et al., 2016) and institutional ICD-9 codes used for falls and medication error (Duffield et al., 2011) as outcome indicators. Neither of these used SET as the theoretical frame. FOC (Parr et al., 2018) is an emerging composite nurse-sensitive quality framework in New Zealand and has also never been included in SET research.

The research aims to contribute to nursing leaders by identifying antecedents of patient outcomes that will support them to be able to articulate the contribution of nursing to improved

patient outcomes. Thus a positive relationship is proposed between resonant leadership, the quality of the leader-member relationship, perceived organisational support, and engagement and quality of care. The *a-priori* model and confirm the hypotheses, study variables and definitions, and the constructs to be used to test the model will be described in the next section. Finally the purpose and objectives will be confirmed.

The *A-Priori* Model and Research Questions

Based on the literature review, there are numerous (N = 32) potential associations to be tested. The research will explore the strength and direction of the relationships between resonant leadership, LMX and POS, engagement, unit level patient outcomes (falls, pressure injuries), perceptions of unit care quality and patient experience (complaints and Friends and Family Test (FFT)) (see Figure 9).
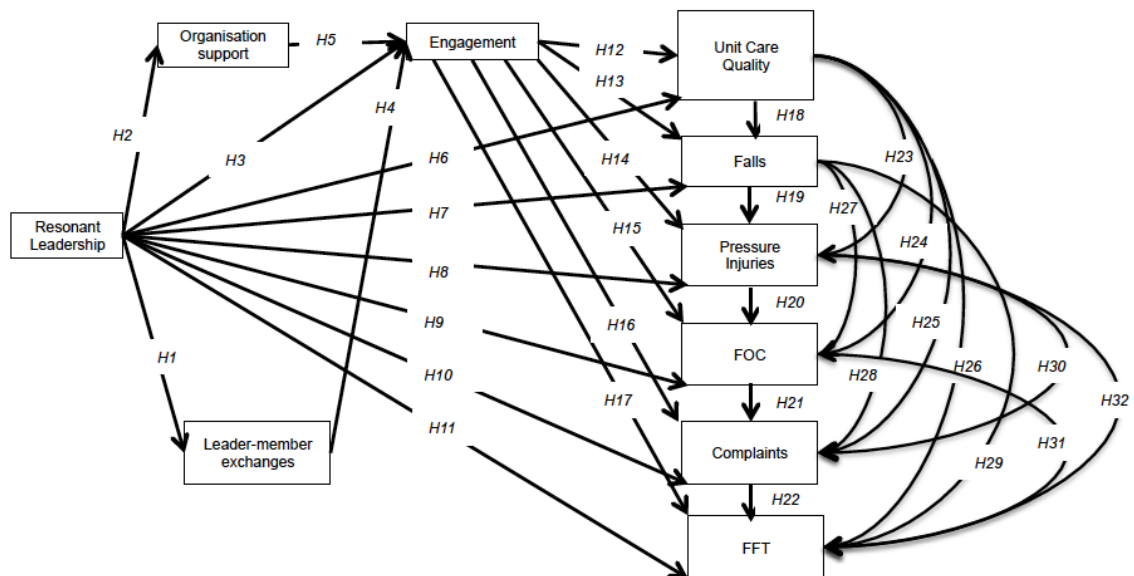
Figure 9: Proposed *a-priori* model hypotheses

Primary hypothesis

The primary hypothesis is that engagement mediates the positive relationship between resonant leadership, exchange relationships, organisational support, perceptions of unit care quality, the negative association with patient outcomes and patient perceptions, and positive associations with fundamental care and patient satisfaction. Both POS and LMX have been demonstrated to

be antecedents of engagement (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013), and resonant leadership as an antecedent of LMX (Squires, 2010). As these findings were all explored within a SET perspective, it is reasonable to conclude that previous findings would be repeated and potentially extended. This provides the rationale to explore the mediating effect of engagement on perceived unit care quality and patient outcomes within a SET perspective in this research.

The model will demonstrate a good fit with the data obtained by surveying nurses and ward clerks in acute inpatient wards at the study selected DHB and gathering institutional data of patient safety (falls and pressure injuries), FOC, patient perception (complaints) and patient satisfaction (friends and family test) nurse-sensitive indicators.

Sub-hypotheses direct pathways

Specifically, the following direct pathways are hypothesised and listed for thoroughness (see Figure 10, p. 60).

H1   There is a positive relationship between resonant leadership and exchange relationships.

H2   There is a positive relationship between resonant leadership and organisational support culture.

H3   There is a positive relationship between resonant leadership and engagement.

H4   There is a positive relationship between exchange relationships and engagement.

H5   There is a positive relationship between organisational support culture and engagement.

H6   There is a positive relationship between resonant leadership and perceptions of unit care quality.

H7   There is a negative relationship between resonant leadership and falls.

H8   There is a negative relationship between resonant leadership and pressure injuries.

H9   There is a positive relationship between resonant leadership and standards of fundamental care.

H10   There is a negative relationship between resonant leadership and complaints.

H11   There is a positive relationship between resonant leadership and friends and family test.

H12   There is a positive relationship between level of engagement and perceptions of unit care quality.

H13   There is a negative relationship between level of engagement and falls.

H14   There is a negative relationship between level of engagement and pressure injuries.

H15   There is a positive relationship between level of engagement and standards of fundamental care.

H16   There is a negative relationship between level of engagement and complaints.

H17   There is a positive relationship between level of engagement and friends and family test.

H18   There is a negative relationship between nurse reported care and falls.

H19   There is a positive relationship between falls and pressure injuries.

H20   There is a negative relationship between pressure injuries and standards of fundamental care.

H21   There is a negative relationship between standards of fundamental care and complaints.

H22   There is a negative relationship between complaints and Friends and Family Test.

H23   There is a negative relationship between nurse reported care and pressure injuries.

H24   There is a positive relationship between nurse reported care and standards of fundamental care.

H25   There is a negative relationship between perceptions of unit care quality and complaints.

H26   There is a positive relationship between perceptions of unit care quality and friends and family test.

H27   There is a negative relationship between falls and standards of fundamental care.

H28   There is a positive relationship between falls and complaints.

H29   There is a negative relationship between falls and friends and family test.

H30   There is a positive relationship between pressure injuries and complaints.

H31   There is a positive relationship between standards of fundamental care and friends and family test.

H32   There is a negative relationship between pressure injuries and friends and family test.

Purpose and Objectives

The purpose of the research is to determine, validate, and revise the *a-priori* model that

explains the relationships between engagement and charge nurse manager leadership, the

leadership relationship, practice environment, and patient outcomes.

Figure 10: Proposed *a-priori* model showing direction of relationships
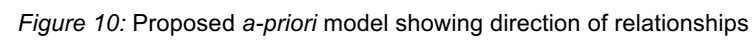
Objectives of the research

The objectives are specifically to:

1. Survey the nurses and ward clerks in acute inpatient settings at the DHB

2. Gather the institutional data which will be used as dependent variables

3. Analyse and refine the model

4. Disseminate the new insights obtained from the data

Summary of Chapter Two

In this chapter I explored the literature and theoretical perspective and built up the *a-priori* model piece by piece. The chapter was concluded by identifying the *a-priori* model, hypotheses, conceptual definitions of the constructs, and clarifying the purpose and objectives of the study. The methodology, design, data collection, and management and the ethical approvals for the research are described in the next chapter.

Chapter 3: Research Method

Introduction

In this chapter I will outline the research method. The chapter starts with an exploration of the ontological and epistemological considerations, and description of the research methodology. The study variables and constructs are then outlined and the seven steps outlined in Hinkin et al. (1997) are used to describe the development of the survey and data collection of the survey and institutional data. The approach to data analysis is described commencing with data management and culminating in structural equation modeling and path and mediation analyses. The various statistical packages used to undertake the analysis are noted. In the last section I outline the ethical approval processes and approvals. Finally, I summarise the chapter.

Ontological and Epistemological Considerations

Ontology is the system of belief which influences the researcher's perspective of what reality is, or the science or study of being (Blaikie, 2009; Crotty, 1998). Ontology can take either an objective or constructionist epistemological position. The epistemological perspective influences the research approach, design, and method, and is influenced by the theoretical perspective (Crotty, 1998).

Objectivism and post positivism view social reality as relatively stable and based on pre-existing conditions (Andrew & Halcomb, 2009). The social constructionist stance holds the view that "all knowledge, and therefore all meaningful reality as such, is contingent upon human practices being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context" (Crotty, 1998, p. 42).

Post positivism has origins from quantum physicists, Heisenberg and Bohr, until the 1960s, suggesting that what is observed is changed by the observation. Feyerabend later suggested that the researcher should adopt a point of view as the starting point, thus proposing the objective existence of meaningful reality and that outcomes of research are not certain or totally objective (Crotty, 1998). Geertz (1973), an anthropologist, suggested culture is the source of thought and behaviour such as the plans, rules, and instructions, and that we view the world through our cultural lens. Humans then create meaning as they engage with their world.

This is a result of a combination of bringing both objectivity and subjectivity together. Fish, a literary critic and linguistics exponent, suggested that objects are made, not found, and that there is a social origin of meaning and social character (Crotty, 1998). From a constructionist perspective, as the field of study is nursing engagement and leadership this brings its own professional and organisational culture. The aspects of interest within this perspective are the social context and alignment with the ability to introduce and effect change, or to intervene.

SET is the theoretical perspective for this research. It has origins from the 1920s in anthropology, social psychology, and sociology (Blau, 1964), but has been increasingly applied to organisational leadership research since the 1990s (Cropanzano & Mitchell, 2005). SET provides insights into social relationships, and reflects the culture through the rules and norms of exchanges, the resources exchanged, and the relationships that emerge. It has been used as a lens predominantly within objective research in nursing (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013; Squires et al., 2010; Trinchero et al., 2013); however, could be beneficial within constructionist research (Uhl-Bien, 2006). The survey research methodology of this research aligns well with SET and the research question.

This research adopts an objective epistemological position and a post-positivist perspective. Taking an objective epistemological perspective (Crotty, 1998) indicates that the starting point is the hypothesis that leadership style, the quality of relationships, and perception of support positively impacts nurse engagement and nurse-sensitive patient outcomes, and that this could be investigated to be supported or otherwise. In addition, it implies that these factors could be measured. A post-positivist perspective is relevant in this research as it builds on outcomes of previous research, which have separately demonstrated relationships between the variables, but not in one study (Crotty, 1998).

The outcomes of the research are not certain as it is also dependent upon the theoretical considerations and impact of decisions throughout the data analysis. Taking an objective epistemological position is underpinned by SET where interactions lead to obligations, which are interdependent and contingent on another (Cropanzano & Mitchell, 2005). SET has strong relevance to the nursing profession (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et

al., 2013; Squires et al., 2010; Trinchero et al., 2013) as it is a high emotional labour occupation (Brunetto et al., 2014).

Design

The purpose of the research is to determine, validate, and revise the *a-priori* model that explains the relationships between engagement and charge nurse manager leadership, the leadership relationship, practice environment, and patient outcomes. The design, therefore, reflects the measurement approach using a cross-sectional survey and existing institutional data. The design minimises the impact of the researcher as the data is collected independent of the researcher.

Methodology

The study purpose is consistent with an objective epistemological position. A cross-sectional self-report survey of nurses and clerical staff and institutional data at an urban DHB will be collected. Exploratory factor analysis will be undertaken using IBM SPSS Statistics 25.0 ® software. Confirmatory factor analysis and structural equation modeling (SEM) will be conducted using IBM AMOS 25.0 ® software. Path and mediation analysis will be conducted using PROCESSv2.16.3 in IBM SPSS Statistics 25.0 ® (Hayes, 2013).

Limitations

Cross-sectional research is prone to common-method bias given the self-report nature of the research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and to prevalence-incidence bias (Levin, 2006). Common-method bias is one of the primary causes of measurement error which jeopardises validity of the results and interpretation of the findings (Podsakoff et al., 2003). The use of institutional data is helpful as a procedural remedy to minimise the impact of common-method bias as it separates the sources of predictor and criterion variables (Podsakoff et al., 2003). Marker variables will be included *a-priori* to allow tests suggested by Lindell and Whitney (2001) for common-method bias to be undertaken. The use of institutional data, however, introduces potential for another limitation: cross-level effect, where the interpretation of the findings are limited to between-team effect, not within-team effect (Klein & Kozlowski, 2000).

Study Variables and Constructs Used to Test the Model

The 10 variables used to test the model were collected using a combination of five self-report variables (see Appendices A-E), and two instruments used as marker variables as a statistical remedy of common-method bias within a survey (Podsakoff et al., 2003). Five institutional data variables that were already being collected to monitor the quality of service delivery were also selected. The following sections define each variable and describe the constructs used to test the model.

Self-report variables

Five self-report variables were combined to create the Leadership and Engagement of Nurses (LEON) survey. Each of the variables was identified from existing research using validated instruments with good psychometric properties. Scales would be reviewed at the commencement of the data analysis to ensure that high scores for all items reflect a positive result and that scales which were different and necessitated standardisation or transformation were identified and treated.

Resonant leadership. Resonant leadership was measured using the 10-item Resonant Leadership Scale which is a subscale of the Alberta Context Tool (Cummings, 2004; Cummings et al., 2008; Estabrooks, Squires, Cummings, Birdsell, & Norton, 2009) (see Appendix A). The scale has demonstrated reliability (α=.95) and face and content validity, with all correlations between variables above 0.5, most above 0.6 (Wagner et al., 2013). Participants were asked to rate the extent to which their immediate supervisor displays leadership behaviours using a 5-point Likert-type scale from "strongly disagree" (1) to "strongly agree" (5). The possible score ranges from 1 to 5. A sample statement is "the leader in my clinical program or unit acts on values even if it is at a personal cost".

Leader-nurse exchange relationships (LMX-7). In this research, the validated LMX uni-dimensional scale developed by Graen and Uhl-Bien (1995) was used to measure the satisfaction of employees with their relationship with their leader (see Appendix B). Participants respond to the 7-items with responses on a five-point scale ranging from "to a very little extent" (1) to "to a very great extent" (5). The possible score ranges from 1 to 7. A sample statement is

'How effective would you characterize your working relationship with your supervisor?' A meta-analysis of the use of the LMX-7 demonstrated an acceptable internal consistency from the member's perspective (α=.89) and was more reliable than when measured from the leader's perspective (α=.78) (Gerstner & Day, 1997). The instrument has also been shown to have predictive validity (Mueller & Lee, 2002).

Perceived Organisational support (POS). Organisational support was measured using the 8-item POS scale (Eisenberger et al., 1997) (see Appendix C). The scale has demonstrated high internal reliability (α=.90) and goodness-of-fit (α=.94) (Eisenberger et al., 1997) and discriminant validity (Rhoades & Eisenberger, 2002). Participants were asked to indicate the extent of their agreement with each item on a 7-point Likert-type scale from "strongly agree" (1) to "strongly disagree" (7). The possible score ranges from 1 to 7. A sample question is 'My organisation cares about my opinions'.

Work engagement. Work engagement was measured using the shortened form of the UWES (see Appendix D). The 9 item scale (UWES-9) developed by (Schaufeli et al., 2006) constitutes the three factors of work engagement; vigour, dedication, and absorption. These factors have all demonstrated factorial validity (Schaufeli et al., 2006). Variances have been demonstrated between countries for factorial validity and internal consistency (α=.60 to .88 respectively, median = .77). The 9-item scale has demonstrated reliability (α=.89 to .97 respectively) (Schaufeli & Bakker, 2003). Participants were asked to answer statements about how they feel at work on a scale of "never" (0) to "always/every day" (6). The possible score ranges from 0 to 6. A sample statement is 'at my work I feel bursting with energy'.

Perceptions of unit care quality. The perception of unit care quality was measured using a 4-item short scale originally used by Aiken et al. (2001) and Aiken et al. (2002). The participants were asked about the care on their unit, during their last shift, over the past year, and their confidence in patients managing at home when discharged using a three or four-point scale (see Appendix E). The scores require standardisation due to the inconsistent Likert scales of the questions. A sample question is "In general, how would you describe the quality of nursing care delivered to patients on your unit?"

Institutional data

Five measures were selected and independently gathered, reflecting nurse-sensitive indicators which were already being collected by the organisation to monitor the quality of care. Table 7 presents these nurse-sensitive indicators, aligned with the relevant quality domain and literature where the indicator is positioned and identified as a nurse-sensitive indicator, and the type of data.

Table 7. Quality domains, nurse-sensitive indicator measures, type of data and references (dependent variables)

Quality domain	Nurse-sensitive indicator	Type of data	Reference
Patient safety outcomes	Falls Pressure injuries	Rate / 1000 patient days	Carryer et al. (2010); Dubois, D'Amour, Pomey, et al. (2013)
Clinical effectiveness	Overall: FOC	% composite	Parr et al. (2018)
Patient experience	Complaints - perception Friends and Family Test - satisfaction	Rate / 1000 patient days Net promoter score	Dubois, D'Amour, Pomey, et al. (2013)

Falls. The number of falls recorded by the institution reported as the number per 1000 bed days (Donaldson, Storer Brown, et al., 2005; First Do No Harm, 2014; Purdy et al., 2010).

Pressure injuries. The number of hospital acquired pressure injuries recorded by the institution reported as the number per 1000 bed days (First Do No Harm, 2014).

Fundamentals of care. A composite overall percentage of nine FOC; (1) communication, (2) clinical monitoring and management, (3) care environment, (4) comfort and pain management, (5) respect, privacy and dignity, (6) nutrition and hydration, (7) safety and prevention, (8) personal care, and (9) self-care measured by patient interviews, ward observation, a charge nurse manager meeting, and results from nursing audit (see Appendix F) (Parr et al., 2018).

Patient perceptions. Complaints are the proxy measure for patient perception in this study. The number of complaints recorded by the institution reported as the number per 1000 bed days.

Patient experience. The Friends and Family Test is the proxy measure for patient satisfaction used in this particular research site (Waitemata District Health Board, 2014). Patient experience is measured by the Friends and Family Test which asks the question "How likely are you to recommend our ward to friends and family if they needed similar care or treatment?" (Department of Health, 2013) and is reported as a percentage of promoters (score 5) over detractors (score 1&2) across a 5 point scale.

Common method bias checks - Marker variables

To avoid potentially misleading findings, a 'marker variable' is suggested by Podsakoff et al. (2003) to be used as a statistical remedy for common-method bias. The marker variable must be theoretically unrelated to one or all of the constructs in the research (Podsakoff et al., 2003). Two marker variables were chosen:

Bureaucracy. The Bureaucracy scale (3-items) (Hage & Aiken, 1967) was used as a marker variable by Rafferty and Griffin (2004) to measure the emphasis on rules and red tape in an organisation. The scale has demonstrated reliability (α=.70) (Hage & Aiken, 1967). Bureaucracy is measured using a 5 point Likert scale where 1 corresponds to 'totally disagree', 3 corresponds to 'neither agree nor disagree' and 5 corresponds to 'totally disagree' (see Appendix G). An example of an item in this scale was 'decisions must go through many levels of management before they are finalised.'

Willingness to try new food products; Domain Specific Innovativeness (DSI) Scale. The second marker variable chosen was a short scale (6-items) originally from Goldsmith and Hofacker (1991) but adapted in a number of settings and used in research by Barcellos, Aguiar, Ferreira, and Vieira (2009) for food innovation. The scale demonstrated reliability in Brazil (α=.798) and in the UK (α=.782) and predictive validity (Barcellos et al., 2009). The 6-item scale was measured using a 5 point Likert scale where 1 corresponds to 'strongly disagree', 3 corresponds to 'neither agree nor disagree' and 5 corresponds to 'strongly agree' (see Appendix H). An example of an item in this scale was 'buy new, different or innovative foods before anyone else I know'.

Psychometric properties of the validated scales of the LEON survey from published research are presented in Table 8 (p. 70). The correlations between the scales would be

reviewed to test the relationship of the marker variables to the other constructs. The marker variable theoretically unrelated to the other constructs would be confirmed as the most appropriate scale to investigate common-method variance (Podsakoff et al., 2003).

Survey

Survey development

The seven steps outlined in Hinkin et al. (1997) were followed to ensure the scales used in the LEON survey were valid and reliable. The first two steps relate to item generation and content adequacy. The LEON survey was constructed using all the self-report variables. The questionnaire asked a total of 49 questions which include 10 demographic questions. Previously validated scales for Resonant leadership, LMX-7, POS, and UWES were used to measure the independent variables and the one dependent variable was included to measure staff perceptions of unit care quality. Two measures, the Bureaucracy scale and Willingness to try new food products; DSI scale were used as marker variables to measure common-method variance. A pilot of the survey revealed that the participant was expected to spend less than 10 minutes answering the questions. As the previously validated scales had been used in countries where English is the first language, the scales were deemed to have met the content adequacy criteria (Hinkin et al., 1997).

The survey included demographic data such as ward, age, experience, education level, and years with manager (Kirwan, Matthews, & Scott, 2013; Wong et al., 2010). Given the health inequalities (Wilson et al., 2010) and reported variation in experience for Māori nurses (Walker, 2015), ethnicity data were also collected. Institutional data requested included age, gender, and ethnicity for the population as a whole to enable comparison.

Survey administration

The third step was survey administration. This includes three components; i) determining the scale for the items, ii) the sample size, and iii) administering the questions.

Item scaling. The Likert scales used in the previously validated instruments were adopted with no changes for this research.

Table 8. Psychometric properties of LEON survey scales

Tool	Measurement	Scoring	Reliability	Validity
Resonant leadership scale (Estabrooks et al., 2009)	10-items measuring components of resonant leadership	Likert scale (1–5) for each item Means of those who answered (1)– (5) used as resonant leadership score	High internal consistency for total scale α=.95	Face/content validity Correlations between variables above 0.5, most above 0.6.
Leader-member Exchange (LMX-7) Graen and Uhl-Bien (1995)	7-items measuring the satisfaction of employees with their relationship with their supervisor	Likert scale (1–5) for each item	Internal consistency from the member's perspective (α=.89)	Reported to have predictive validity
Perception of Organisational Support (POS) (Eisenberger et al., 1997)	8-items measuring perception of organisational support	Likert scale (7–1) for each item	High internal reliability α=.90 and goodness-of-fit α=.94	Reported to have discriminant validity
Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2006)	9-items measuring three factors of work engagement; vigour, dedication and absorption	Likert scale (0–6) for each item	High internal reliability α=.89 to .97	Factorial validity variances between countries for and internal consistency (α=.60 to .88 respectively, median = .77).
Perceptions of unit care quality Aiken et al. (2001) and Aiken et al. (2002)	4-items measuring perceptions of care on their unit	Likert scale (1–4) for 3 items and 1-3 for one item		Not reported
Bureaucracy scale (Hage & Aiken, 1967)	3-items measuring the emphasis on rules and red tape in an organisation	Likert scale (1–5) for each item	Good reliability α=.70	Not reported
Willingness to try new food products; DSI scale Goldsmith and Hofacker (1991) adapted by Barcellos et al. (2009)	6-items measuring	Likert scale (1–5) for each item	Good reliability in Brazil (α=.80) and in the UK (α=.78).	Reported to have predictive validity

Sample size calculation. A sample of at least 200 participants is recommended as sufficient for SEM (Hu & Bentler, 1999; Kline, 2016; Purdue University, 2015; Spence Laschinger, Wilk, Cho, & Greco, 2009; Wong & Laschinger, 2013). Alternatively, to consider the complexity or size of the model, a sample size of 10-20 cases per included measured variable is also appropriate (Bentler & Chou, 1987; Lomax & Schumacker, 2004)). As this research has 10 variables, a sample of 200 would have been acceptable (Squires, 2010). A response rate of 30% is generally accepted for survey research (Babbie (2011). A 30% response rate from the available sample of 1142 (see Figure 11, p. 86) met the *a-priori* sample size requirement.

Sample criteria. The convenience sample was drawn from the population of a single DHB in metro Auckland New Zealand where there are around 24 charge nurse manager unit leaders with responsibility for their adult inpatient medical surgical wards, and registered nurses, enrolled nurses, and health care assistants, as well as administrative and clerical staff in their wards. These staff were all managed by the unit manager and contributed to the unit's quality outcomes. This is consistent with the approach taken by White, Wells, and Butterworth (2014) who considered that all team members contribute to the quality of care on the ward. Given this research is investigating the variables through the lens of SET, it is reasonable to deduct that the administrative staff are involved in establishing and supporting relationships between staff, patients, and family; and that this contributes to the overall experience of patients and their families. For example, patients often comment on the importance of conversations they have with 'the tea lady' or the abruptness of the ward clerk. All staff in a ward are likely to be asked for assistance or information regarding care which is delivered, a desire to speak to a doctor, physiotherapist or nurse and may observe or be required to support patients/families who have cause to complain about their care or experience. It is also worth noting that in New Zealand, health care assistants work in partnership with registered and enrolled nurses to provide direct care.

All nursing staff and clerical staff in each unit were invited to participate. Responses would capped to 25 for each unit from the registered and enrolled nurse groups, to preserve anonymity of smaller units as unit size varies. Purposive sampling was used to sample all 24 leaders and all administrative staff due to the low numbers.

As previously described, the research sample were registered nurses, enrolled nurses, health care assistants, and administrative and clerical staff, at an urban DHB in New Zealand. All staff at the DHB communicated in English; therefore, translation was not be required. All the instruments were available in English. Although one instrument (UWES) was developed in another language (Dutch), the English version has been used in Canada, Australia, and South Africa demonstrating reliable and consistent psychometric properties (Schaufeli & Bakker, 2003). The other scales were developed in Canada (Estabrooks et al., 2009) and USA (Eisenberger et al., 1997; Graen & Uhl-Bien, 1995).

Participants were expected to originate from a number of ethnic demographic groups and different professional groups (nursing and administrative). Functional, item, and scalar equivalence was evaluated by confirmatory factor analysis, goodness-of-fit, and latent mean structures respectively (Harachi, Choi, Abbott, Catalano, & Bliesner, 2006).

Permissions

The authors of the scales used in the LEON survey provided permission to use them. This includes the Resonant Leadership Scale (Estabrooks, Squires, Cummings, Birdsell, & Norton, 2009), The LMX, POS, UWES, and nurse reports of quality of care (Aiken, Clarke, & Sloane, 2002) (see Appendix J). The marker variables were both available as published scales and therefore permission was not required.

Survey administration procedure. The LEON survey (See Appendix I), was developed and administered on-line using Survey Monkey. Paper copies were also provided for those without access to email. The LEON survey was sent by email to frontline nursing and clerical staff and their line managers on wards or units. Paper copies were also provided.

Consent

An information sheet explaining the research and consent to voluntarily participate was provided to participants (see Appendix K). Completion of the questionnaire (or survey) was taken as indicating the participant's consent to participate. A statement describing this was included both in the Information Sheet and at the end of the paper questionnaire and online survey when they submitted their data. As the participants provided consent by voluntarily completing the questionnaire, hard copy consent forms were not required.

Recruitment

Independent management of the survey was arranged to manage recruitment, reminders, match subjects anonymously, and keep a master list to preserve confidentiality of the individuals and the units in which they work. The DHB's Workforce Development Manager was responsible for sending the electronic survey, managing recruitment, and reminders. A poster was displayed in wards, and a paper form delivered to wards. The researcher attended various forums with charge nurse managers such as charge nurse manager's meetings and Frontline Focus Friday, to promote the research. The DHB Māori and Pacific leaders were asked to communicate and raise awareness of the research to staff. The New Zealand Nurses Organisation professional leader was informed about the research and asked to promote participation with delegates and members.

On 1 June 2016, participants were contacted by Workforce Development Manager using the work email. As structural equation modeling analysis cannot be undertaken with a small sample, the researcher was required to identify effective methods to maximise the response rate. Babbie (2011) suggested that follow up mailings are effective to increase response rates, recommending the initial distribution, and two follow up reminders two to three weeks apart. Where non-respondents are unable to be identified, as in this research, he recommended sending it to everyone with a thank you for those who have responded and encouragement for those who have not. This is similar to the approach used by Squires et al. (2010) who achieved a response rate of 49.4%. Dillman (2000) also recommended multiple contacts to increase response rate. Other approaches have been integrated to maximise response rate. These include providing a respondent-friendly questionnaire, noting who to contact with questions and noting that participation is voluntary and not attributable to them. Incentives and personalised approaches by the researcher were not used.

An email was sent and a poster (see Appendix L) was displayed in clinical areas two weeks after the initial contact, thanking those who had completed and reminding those who had not, and what the deadline was. Charge nurses were asked to remind staff that the research was still seeking participants, and to highlight the remaining time for completion at handover and ward meetings. Units with low response rates were targeted by the Workforce Development

Manager from the LEON email address with reminders to raise awareness of the survey to increase the response rate. This was repeated during the two months of collection as recommended by Babbie (2013). Participants were allocated an anonymous study number and matched by an independent party to units who was given research specific identifiers. The Workforce Development Manager entered data from any returned paper questionnaires into Survey Monkey. All data was de-identified prior to the researcher receiving any data.

Institutional Data

As the LEON survey was conducted over a two-month period, between 1 June 2016 and 31 July 2016, the institutional data were collected for the period of June and July 2016 (see Table 9).

Table 9. Nurse-sensitive indicator measures, type of data and data period (dependent variables)

Nurse-sensitive indicator	Type of data	Period
Falls	Rate / 1000 patient days	Jun & Jul 16
Pressure injuries		Jun & Jul 16
Overall: FOC	% composite	Jun 16 peer review
Complaints	Rate / 1000 patient days	Jun & Jul 16
	Net promoter score	
Friends and Family Test		Jun & Jul 16

The Information Services Manager, in the Institute for Innovation and Improvement (from the research site), who was also an independent person, matched data to unit level (using research specific identifiers) and removed patient identifiers prior to passing to the researcher. Advice from the legal department of the DHB confirmed that Rule 11(2)(c) did not require the researcher to seek authority to disclose information if the person is not identified, or it is for a statistical purpose, or it is for research which when published is not identifiable to individuals (Privacy Commissioner, 1994, p. 59).

Patient safety: Falls and pressure injuries

The patient safety data: falls, and pressure injuries, were routinely collected by the institution, as incidents (falls and pressure injuries) occur. These are provided as a rate/1000 bed days. The data are de-identified and aggregated and provided at unit level. It was collected in the process of service delivery and service improvement. There was no need to access patient medical records. This aligns with the purpose of this research.

Clinical effectiveness: Measurement of FOC

The FOC measurement framework included four tools; Part A: Patient Questions, Part B: Ward Observation, Part C: Ward Management, and Part D: Nursing Audit and institutional data (Parr et al., 2018). Part A involved interviewing five patients and asking them 40 questions. On the day of the review, all patients eligible to be interviewed were provided with an information leaflet. Language and cultural support enabled non-English-speaking patients and family to participate. Consent was obtained prior to being interviewed by the senior nurses. The data were collected in the process of service delivery improvements. This aligns with the purpose of this research. There was no need to access patient medical records.

Part B involved observing the ward, noting sounds, smells, cleanliness and tidiness, and information for patients; as well as observing staff interactions and asking five staff three questions. Part C involved an interview with each charge nurse manager and Part D automatically gathered the previous quarter's nursing metric results and established whether participation in audit and results of the audits met expected standards or not.

The peer reviews were conducted over a period of 3-4 weeks in June 2016. A senior nursing leader partnered with an educator from another service and completed each review on one day over the course of approximately 2 hours. The charge nurses were provided with dates and times of the review in advance. Participants scored items using a Likert scale from yes (2) to no (0) (Parr et al., 2018). The FOC data were analysed as a composite overall percentage.

Patient experience: Patient perception and satisfaction

Patient perceptions: Complaints. The complaints data were routinely collected by the institution, as they occurred. These are provided as a rate/1000 bed days. The data are de-identified and aggregated and provided at unit level. It was collected in the process of service delivery and service improvement. There was no need to access patient medical records. This aligns with the purpose of this research. Data were matched by the Information Services Manager to unit level (using research specific identifiers). Ward names and patient identifiers were removed prior to passing to the researcher.

Patient satisfaction: Friends and family test. The Friends and Family test was an iPad/tablet-based survey which asked patients whether they were likely to recommend the ward

to their friends and family if they required similar treatment. The institution has been collecting

this data since July 2013. The survey was collected in the process of service delivery

improvements. This aligns with the purpose of this research. There was no need to access

patient medical records and is not identifiable to a patient.

The independent variables are subjective and the dependent variables are

predominantly objective (see Table 10). Table 10 demonstrates the indicators measured within

this research and the different data sources required and includes a combination of subjective

and objective sources reflecting the suggestion by McCusker et al. (2004) to include objective

measures.

Table 10. Proposed nurse-sensitive measures (dependent variables)

Quality domain	Indicator	Donabedian (1969) domain	Subjective / objective	Data source	Avail	Significant results
Patient safety	Falls Pressure injuries	Outcome Outcome	Objective Objective	Incidents Incidents	Yes Yes	Capuano et al. (2005)
Clinical effectiveness	FOC (composite %)	Process and outcome	Objective	Observation	Yes	Parr et al. (2018)
Patient experience	Complaints Friends and Family Test	Outcome Outcome	Objective Objective	Incidents Survey	Yes Yes	- -
Overall quality	Nurse assessed quality of care / Perceptions of unit care quality	-	Subjective	LEON Survey	No	Van Bogaert et al. (2012); (Van Bogaert, Meulemans, et al., 2009; Van Bogaert et al., 2013; Wong et al., 2010)

Data Collection

Data collection was conducted for a period of two months from 1st June 2016 to 31st July 2016.

Participants were asked to complete the online survey or complete the paper form and put it in

the internal post. An information sheet explaining the research and consent to voluntarily

participate was provided to subjects.

Data Analysis

In this section I describe the approach to data management, exploration, and management of missing values, analysis of descriptive data and exploratory and confirmatory analysis. The goodness-of-fit cut off criteria and references are provided. Tests used for internal consistency, construct validity, and common-method bias are outlined. Finally structural equation modeling and path and mediation analysis approaches are presented.

Data management

The LEON data were received via email from the Workforce Development Manager in SPSS format and the Information Services Manager provided the institutional data via email as an excel file. All data were entered into IBM SPSS Statistics 22.0 ® software and IBM AMOS 22.0® software for structural equation modelling. A codebook was prepared listing all variables, items and scores, and all decisions made regarding the data were recorded in the codebook. Institutional data were added to the SPSS file containing the LEON data prior to cleaning and analysis.

Ethnicity data were cleaned and recoded to the Statistics New Zealand (2013) census categories. Data recorded "q0027_other" were recoded to ethnicity sub codes and NA and 300 recoded as missing. Data were combined and taken to level 1 codes using Statistics New Zealand (2005) definitions. Ethnicity data was transformed into a Treaty of Waitangi variable with two groups; Māori and Pakeha to compare the experiences of Māori with non-Māori.

Ward names were recoded from alphabetical to numerical, the value 99 was used to represent all missing data except for complaints, falls, and pressure injuries where 9999 was used. The data for the variable 'Years in professional practice' were recoded into 5-year groups, the years in practice, at the organisation and on the unit were rounded up to whole numbers. The variable 'years in professional practice' was recoded to reflect those in their first year of practice as Nurse Entry to Practice as NETP, and also grouped into five-year groups after the fifth year of practice. Weblink 1 was coded as online (1), Weblink 2 was coded as (2), paper and saved as new variable 'OnlineVpaper'. The duration to complete the survey was calculated.

The LEON survey were reviewed to ensure that high scores for all items reflected a positive result and that scales which were different and necessitated standardisation or

transformation were identified. This required a number of actions to be undertaken on the data

(see Table 11).

Table 11. Data management comments and actions

LEON Scale / Institutional data item	Data comments	Action taken
Perceptions of unit care quality	High not positive Scale not standardised	Reverse scored and items standardised
Utrecht Work Engagement Scale (UWES 9)	High positive	None
Perception of Organisation Support (POS)	Items 1-5 and 8,high not positive	Reverse scored items 1-5 and 8
Leader-member Exchange (LMX-7)	High positive	None
Resonant Leadership	High positive	None

Missing value analysis

The variables in the LEON survey and institutional data were tested for patterns of missing data

using Little's (1988) MCAR test and addressing data which was >5% missing. AMOS Software

requires a complete set of data and therefore missing data required treatment. A number of

methods can be used, such as list wise or pairwise deletion, or substitution of the variable's

mean; however, all of these methods have trade-offs on power, model fit, and variation

respectively (Research Gate, 2015). Gold and Bentler (2000) identified that the expectation-

maximisation method was the most favourable method regardless of sample size proportion of

missing data and distribution. Therefore the expectation-maximisation method was used.

Descriptive statistics

Descriptive statistics were calculated for the demographic characteristics of the sample. The

mean and standard deviation were calculated for the for age, duration to complete the survey,

years in practice, year on the unit and year in the organisation, and frequency and percent for

categorical data such as gender, ethnicity, role, specialty, education and employment status.

Further exploration was undertaken to understand the study samples between group

differences such as mode of survey response (online or paper), employment status, age, year in

practice and ethnicity, and Māori/non-Māori experiences using independent samples t-test. A

one-way ANOVA was undertaken for all variables and demographic variables which were

categorical in nature. An analysis of outliers within the demographic groups was conducted

(Donald, 2016). The data were also analysed for influentials using Cook's (1977) distance.

Exploratory and confirmatory factor analysis

Step four involved conducting exploratory factor analysis to reduce the set of items and confirmatory factor analysis to test the significance of the scales as the instruments were being used in New Zealand for the first time (Hinkin et al., 1997). Exploratory factor analysis was undertaken using principal components analysis to reduce the factors with oblimin rotation as the factors were considered to be correlated and simplification of the structure was desired (Yong & Pearce, 2013). The factor scores were imputed and the data were explored for normality although Ghasemi and Zahediasl (2012) advised that distribution of data can be ignored where sample sizes are over 200. In addition, in large sample sizes the criterion should be ±2.58 and in very large samples no criterion should be used. Correlations between the LEON scales were reviewed and bivariate analysis undertaken between the scales and the participant demographics.

Confirmatory factor analysis was undertaken to determine goodness-of-fit and to confirm that prior analysis has been correctly undertaken (Hinkin et al., 1997). The two-step approach suggested by Anderson and Gerbing (1988) was followed to test the full measurement model. The first step was to establish the goodness-of-fit, and discriminant and convergent validity. The second step was to test the structural equation model with the data. One factor congeneric models were reviewed for goodness-of-fit.

Goodness-of-fit. The model will be assessed for how well it reflects the data using the χ^2 statistic of goodness-of-fit criteria recommended by Hu and Bentler (1999) (see Table 12, p. 80) as the criteria seem to result in lower Type II error rates (Hu & Bentler, 1999). The Chi Square (χ^2), should be low relative to the degrees of freedom (Hooper, Coughlan, & Mullen, 2008). The relative chi square is CMIN/DF should be no more than 2 times the degrees of freedom (Tabachnick & Fidell, 2007). The Tucker Lewis Index (TLI) is less affected by sample size and compensates for model complexity (Hu & Bentler, 1999). The comparative fit index (CFI) along with TLI and root mean square of approximation (RMSEA), is most sensitive to models with mis-specified factor loadings (Hu & Bentler, 1999). Both the TLI and CFI cut-off criteria should be >.95. The RMSEA is a parsimony-adjusted measure of fit which compensates for the effect of model complexity (Hu & Bentler, 1999). The cut-off criteria is >.06 (Hu &

Bentler, 1999). The standardised root mean square residual (SRMR) can be affected by sample size but is most sensitive to models with mis-specified factor covariance (Hu & Bentler, 1999). Combinations of RMSEA >.06 and SRMR>.09 also result in the least sum of Type I and Type II error rates and to distinguish good models from bad ones (Hu & Bentler, 1999).

Table 12. Goodness-of-fit minimum cut-off criteria (Hu & Bentler, 1999)

Statistic	Cut off criteria	Rationale	Reference
χ^2	Low χ^2 relative to DF		(Hooper et al., 2008)
CMIN/DF	Less than 2 times the df	Adjusts for sample size	Tabachnick and Fidell (2007)
p	>.05	Proposed model is consistent with the data	(Hooper et al., 2008)
TLI	>.95	Compensates for the effect of model complexity	Hu and Bentler (1999)
CFI	>.95	Most sensitive index (with TLI, RMSEA) to models with mis-specified factor loadings	Hu and Bentler (1999)
RMSEA	<.06	Compensates for the effect of model complexity	Hu and Bentler (1999)
SRMR	<.08	Most sensitive to models with mis-specified factor covariance.	Hu and Bentler (1999)

Internal consistency

Step five determined the internal consistency of the scales (Hinkin et al., 1997). Although the LEON scales had been previously validated in other research, the psychometric properties of the LEON scales were determined. Internal reliability was verified by computing Cronbach's alpha.

Construct validity and replication

Step six determined construct validity and step seven involved conducting replication (Hinkin et al., 1997). The two-step approach suggested by Anderson and Gerbing (1988) was conducted to test the full measurement model. First the measurement model was assessed for goodness-of-fit and discriminant and convergent validity, and then the structural equation model was tested with the data. Prior to testing the structural equation model with the data, the construct was replicated. The sample was randomly split and configural and metric invariance tests were undertaken and discriminant and convergent validity were replicated.

Common-method bias

A concern when combining multiple self-report variables into independent and dependent variables is common-method bias (Podsakoff et al., 2003). Common-method bias is "the magnitude of the discrepancies between the observed and the true relationships between constructs that results from common-method variance" (Doty & Glick, 1998, p. 376). Common-method bias was checked using the checks suggested by Podsakoff et al. (2003) including procedural remedies and statistical remedies. Given the self-report survey design, tests for common-method bias were undertaken. This included undertaking Harman's one factor test and the single factor test. As marker variables had been included *a-priori,* tests for common-method variance as described by (Lindell & Whitney, 2001) were also undertaken.

Procedural remedies. The inclusion of institutional data (such as falls, pressure injuries, FOC, and patient experience) is a recognised procedural method to reduce the risk of common-method bias as the predictor and criterion variables are obtained from different sources (Podsakoff et al., 2003). Most of the dependent variables were obtained from sources other than the independent variables. For example, the 'perceptions of unit care quality' scale was the only dependent variable that was included in the LEON survey, as falls, pressure injuries, complaints, FOC and Friends of Family test were all existing institutional data. In addition, this was positioned in section one of the LEON instrument. Anonymity was protected, and respondents were informed in the participant information sheet and the introduction to the survey that there were no right or wrong answers. To further reduce the opportunity for common-method variance, the question order was altered so that the dependent variable, perceptions of unit care quality, was at the beginning, and the two marker variables were found at sections 3 and 7.

Statistical remedies. Further statistical measures are also suggested such as Harman's single factor test and undertaking confirmatory factor analysis of all the variables (Podsakoff et al., 2003).

Harman's single factor test. "The basic assumption of this technique is that if a substantial amount of common-method variance is present, either (a) a single factor will emerge

from the factor analysis or (b) one general factor will account for the majority of the covariance among the measures.

Common latent factor. More recently, some researchers using this technique (cf. Iverson & Maguire, 2000; Korsgaard & Roberson, 1995; Mossholder, Bennett, Kemery, & Wesolowski, 1998) have used confirmatory factor analysis as a more sophisticated test of the hypothesis that a single factor can account for all of the variance in their data" (Podsakoff et al., 2003, p. 889). This is achieved by adding a common latent factor to the model and reviewing the difference in standardised regression weights (Chin, 1998).

Marker variables. A willingness to try new food products; DSI scale was used as a 'marker variable' (social desirability scale) (see Appendix H) as it was theoretically unrelated to one or all of the constructs in the research (Podsakoff et al., 2003).

Structural Equation Modeling

The second step suggested by Anderson and Gerbing (1988) was to test the structural equation model with the data. Hypothesis testing was undertaken using structural equation modeling using IBM AMOS 25.0 ® software to statistically test the strength and direction of the relationships between multiple independent and dependent variables simultaneously in the hypothesised model (see Figure 10, p. 60). Structural equation modeling is considered to be predominantly based on confirmatory, rather than exploratory, technique (Purdue University, 2015) to determine or validate a proposed causal process or model. Measurement error was modeled into the path model and goodness-of-fit using Hu and Bentler (1999) criteria of fit to determine whether the proposed theoretical model is valid. Finally the specific parameters of the proposed model were evaluated. The primary researcher, applicant, and second supervisor and Information Services Manager had access to all the data.

Path and mediation analysis

Path and mediation analysis was conducted using PROCESS v2.16.3 in IBM SPSS Statistics 25.0 (Hayes, 2013) with a 95% confidence interval based on 10,000 bootstrap samples. Bootstrapping uses repeated samples from the data to be assured that the results are not sample specific (DiCiccio & Efron, 1996; Efron, 1992). Although AMOS can be used for path and mediation analysis, PROCESS is a suitable method in this research as the sample size is

adequate, the model only contains observed variables and there is no missing data (Hayes, Montoya, & Rockwood, 2017).

Ethical Approval

AUTEC approval. AUTEC provided approval to commence on 19 April 2016 for research '16/65 What is the relationship between engagement, charge nurse manager leadership, the leadership relationship, practice environment and patient outcomes?' (Appendix M).

      Locality approval. The research was registered with the Awhina Research and Knowledge Centre (reference RM13300) at the DHB. Locality approval was provided in January 2016 (see Appendix N). The DHB locality approval process required DHB managers to agree to the research being undertaken at the DHB and for its staff to be participants if they choose. At the conclusion of the research a copy of outputs, reports or publications will be forwarded to the Awhina Research and Knowledge Centre.

      A Māori review was also required and provided to the Awhina Research and Knowledge Centre for consideration. Approval was provided on 30 January 2016 (Appendix O). The Workforce Development Manager and Operations Manager – Māori provider arm of the DHB, recommended a section be included in the thesis about Māori experiences and also to present the findings at a hui (meeting).

Summary of Chapter Three

This cross-sectional design of the research, administered as the LEON survey to nurses and clerical staff working in acute inpatient wards at the DHB in June 2016 has been described. I described the institutional data, data sources, and data management. The data analysis approach was described including missing value analysis, exploratory and confirmatory factor analysis, common-method variance and the two-step approach to test the full measurement model. Finally the ethics applications, approvals and requirements have been described. In the next chapter I will present the results of the research.

Chapter 4: Results

Introduction

In this chapter I present the results of the research. The chapter starts with a brief overview of the sample size. I explain the decisions to finalise the responses and present relevant demographic characteristics. The exploratory factor analysis of each of the constructs of the LEON survey and the psychometric properties of the scales are presented. I present the full measurement model which resulted from confirmatory factor analysis and results of the processes to test the full measurement model suggested by Anderson and Gerbing (1988). I describe the results from the common-method bias analysis and then test the structural equation model with the data. I present the final path structural equation model and provide the hypothesis summary. Finally I present the results of the path and mediation analysis and summarise the chapter.

Sample Size

The available population which met the inclusion criteria was 1142 staff. The LEON survey was emailed to 1078 employed staff with valid email addresses. Twenty-seven email responses revealed the staff had recently left the DHB's employment. A further 37 had no email address, so a paper copy was sent to them via the internal post. The total eligible sample size was therefore 1115. A further 10 paper copies were provided to the charge nurse manager of each ward to enable staff to complete the survey on paper at their convenience. There were 367 responses giving a 32.9% response rate which met the expected 30% response rate (Babbie, 2011) (see Figure 11, p. 86). As the maximum number of 25 registered or enrolled nurses per unit was not reached in any unit, a random sample of respondents was not required.

Missing value analysis

The missing value analysis indicated that in 14.7% cases the name of the unit was missing, 13.1% had not provided their ethnicity and 13.6% did not provide their year of professional practice. The instrument's data was not deemed to be missing completely at random as Little's MCAR test: χ^2 = 2704.088, df = 2445, p < .001. The patterns of missing-ness revealed a significant difference in means for unit, ethnicity and year of professional practice, and

"confidence that patients are able to manage their care when discharged". There was also a significant difference between 'unit' and 'I get carried away when I am working', 'does your leader recognize your potential?' and 'my organization shows a lot of concern for me'. This indicates that the participants deliberately did not complete the 'unit' field. As 'unit' was required for the structural equation model analysis, the 54 cases with missing 'unit' data were removed (see Figure 11, p. 86).

The remaining 313 cases were explored for missing data. The missing data were deemed to be missing completely at random as Little's MCAR test: χ^2 = 1750.003, df = 1757, p > .05. However, four items had >5% missing data (see Table 13). Four units were identified as contributing to 58 cases with missing data for Friends and Family Test, complaints, pressure injuries and falls. The Information Services Manager confirmed that these data were missing as these units were either not using the Friends and Family test (units H and U) or an occupied bed day could not be obtained and a rate/1000 bed days could not be calculated (unit Q and V). When these further 58 cases were removed the data (N = 255) were deemed to be missing completely at random as Little's MCAR test: χ^2 = 169.659, df = 198, Sig. = .928 as this removed all missing data >5% (see Figure 11, p. 86).

Table 13. Mismatch of Indicator Variables (in percentage)

	FFT_Jun16Jul16	RPI_Jun16Jul16	RComp_Jun16Jul16	RFall_Jun16Jul16
FFT_Jun16Jul16	6.71			
RPI_Jun16Jul16	18.53	11.82		
RComp_Jun16Jul16	18.53	.00	11.82	
RFall_Jun16Jul16	18.53	.00	.00	11.82

The diagonal elements are the percentages missing, and the off-diagonal elements are the mismatch percentages of indicator variables.
a. Variables are sorted on missing patterns.
b. Indicator variables with less than 5% missing values are not displayed.

Although there were no abnormal Cook's distances >.50 three cases were consistently outliers >.26. These were removed and the final response number was 252 (see Figure 11, p. 86).
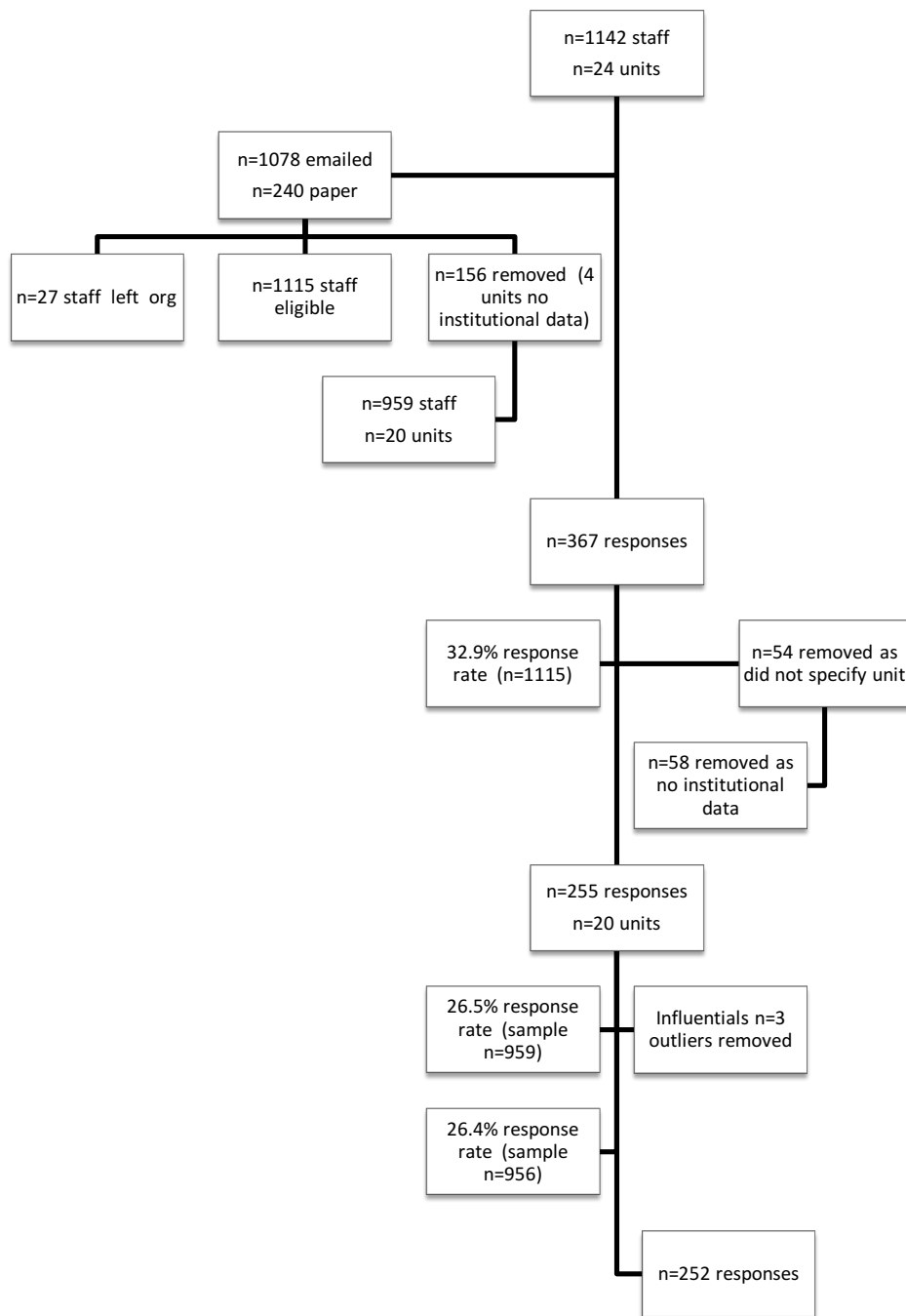
Figure 11. Decision tree to reduce cases, achieve final population, sample size and response rate

Demographic Characteristics

Respondents

A total of 210 respondents completed the survey online and 42 were completed on paper (see

Table 14, p. 88). The range of duration to complete the survey was 104 minutes with the mean

13.04 (SD=11.80). A one-way analysis of variance (ANOVA) confirmed that there were no

differences for duration to complete the survey, between or within the groups completing online or on paper. An independent samples t-test was conducted which indicated that older staff chose to complete the survey online (M=3.10, SD=1.329) and younger staff chose to complete on paper (M=2.24, SD=1.041); t(70.61)=3.502, p=.001. Likewise there was a statistically significant difference for more experienced staff in professional practice choosing online completion (M=3.21, SD=2.35) and less experienced staff choosing paper completion (M=2.39, SD=1.81); t(68.96)=2.51, p=.014.

Role. Charge nurse managers, ward clerks, and full time staff responded more frequently than the population and there were fewer responses than expected from health care assistants and part time staff. Seventeen of the 18 charge nurse managers responded, and 20 ward clerk/administrators responded. The largest proportion of staff who responded were registered nurses (N = 184, 73%).

Gender. Respondents were predominantly female (N = 218, 86.5%) and under 35 (N = 112, 44.4%). This was expected given the sample population.

Education and employment status. Thirty nine percent (N = 100) had completed postgraduate study and 40.9% held a baccalaureate degree (N = 103). Sixty percent of respondents were employed full time, which is an inverse representation of the population (68%).

Ethnicity. Fifty percent (N = 127) respondents were European, and 38.1% (N = 96) were Asian. Four percent were Pacific people (N = 10) and 2.4% were Māori (N = 6).

Experience. Twenty five percent had been in practice 3 years, the median was 8 and the mode was 2 (see Table 15, p. 89). A small proportion of registered nurses and enrolled nurses (N = 15, 7.9%) were in their first year of practice.

Table 14. Demographic characteristics of respondent sample compared with sample population

Demographics		LEON Frequency (n)	LEON Percent (%)	Sample Population (n)	Sample Population Percent (%)
Gender	Female	218	86.5	1012	89
	Male	32	12.7	130	11
	Transgender	2	0.8	0	0
Age	24 and under	26	10.3	123	11
	25-34	86	34.1	410	36
	35-44	49	19.4	223	20
	45-54	52	20.6	209	18
	55-64	33	13.1	148	13
	65 and over	6	2.4	29	3
Role	Charge Nurse Manager	17	6.7	24	2
	Registered Nurse (including ACCN)	184	73.0	871	76
	Enrolled Nurse	7	2.8	25	2
	Health Care Assistant	24	9.5	181	16
	Ward Clerk, Administrative assistant or Admin clerk	20	7.9	41	4
Highest Education	High School	33	13.1		
	Vocational certificate	15	6.0		
	Baccalaureate degree	103	40.9		
	Post-graduate certificate	49	19.4		
	Post graduate diploma	38	15.1		
	Masters degree	13	5.2		
Unit Speciality	Medical or surgical	235	93.3		
	Assessment or Short Stay	15	6.0		
	Mental Health, Post-acute or critical care	2	0.8		
Employment status	Full-time	152	60.3	366	32
	Part-time	100	39.7	776	68
Ethnicity	European	127	50.4	51.4	53
	Māori	6	2.4	22	2
	Pacific People	10	4.0	3.5	4
	Asian	96	38.1	37	38
	MELAA	6	2.4	3	3
Online vs. paper	Online	210	83.1		
	Paper	42	16.9		

N = 252

The mean number of years on the specific unit was 4.65, and the mode was one year (see Table 15). The years on the unit and at the organisation had a high positive kurtosis of 6.67, indicating that there would be a heavy tail or outliers which was confirmed in the histogram and as the mode was one. Fifty percent of the respondents had been on the unit for three years and for four years at the organisation (see Table 15). The years in professional practice was normally distributed as the skewness and kurtosis were within a tolerable range for the sample size of ±2.58 (see Table 15).

Table 15. Statistics showing the mean, mode and median of experience and employment

		Total number of years in professional practice (count present year as complete year)	Total number of years on current unit (count present year as complete year)	Total number of years at current organisation (count present year as complete year)
N	Valid	251	252	252
	Missing	1	0	0
Mean		12.15	4.65	6.88
Median		8	3.00	4.00
Mode		2	1	1
Std. Deviation		11.23	5.15	7.09
Skewness		1.20	2.37	1.93
Std. Error of Skewness		0.15	0.15	0.15
Kurtosis		0.51	6.67	4.66
Std. Error of Kurtosis		0.31	0.31	0.31
Range		47	30.00	42.00
Minimum		0	0.00	0.00
Maximum		47	30.00	42.00
Percentile	25	3.00	1.00	2.00
	50	8.00	3.00	4.00
	75	17.00	6.00	10.00

Relationships between variables

A cross-tabulation of role and highest education level was undertaken to understand relationships between the variables (see Table 16, p. 90). A χ^2 test indicates a relationship between role and highest level of education (χ^2 = 184.116, df=20, p=.000). Seventy six percent of charge nurse managers (N = 13) had completed postgraduate education. Five health care assistants and two ward clerks reported they had a baccalaureate degree, however 47.8% health care assistants (N = 20) and 60% ward clerks had no education beyond high school. The mean number of years in practice was 12.15 years.

Table 16. Cross-tab of highest level of education by role

	Charge Nurse Manager	Registered Nurse (including ACCN)	Enrolled Nurse	Health Care Assistant	Ward Clerk, Admin Assistant or Clerk	Total
High School	1	4	5	11	12	33
Vocational certificate	1	3	1	5	5	15
Baccalaureate degree	2	94	0	5	2	103
Post-graduate certificate	5	43	0	0	1	49
Post graduate diploma	2	33	1	2	0	38
Masters degree	6	7	0	0	0	13
Total	17	184	7	23	20	251

Respondents were generally in the early part of their careers (see Table 17). A cross-tabulation of role and years of professional practice was undertaken. A χ^2 test indicates a relationship between role and years of practice (χ^2 = 124.116, df=36, p=.000) which is to be expected.

Table 17. Post hoc: experience in profession/role and with current manager

	Years	Years in professional practice		Years on current unit	
		Frequency	Percent	Frequency	Percent
Valid	0-4	72	28.6	171	67.9
	5-9	69	27.4	48	19.0
	10-14	34	13.5	18	7.1
	15-19	21	8.3	9	3.6
	20-24	15	6.0	2	0.8
	25-29	8	3.2	2	0.8
	30-34	13	5.2	2	0.8
	35-39	11	4.4	0	0
	40-44	6	2.4	0	0
	45-50	2	0.8	0	0
	Total	251	99.6	0	0
Missing	System	1	0.4	0	0
Total		252	100.0	252	100.0

Exploratory factor analysis

In this section each of the LEON scales is explored using exploratory factor analysis, as step four recommended by Hinkin et al. (1997) to reduce the set of items as required, prior to confirmatory factor analysis.

Resonant Leadership

Data were subjected to factor analysis using principal component analysis and oblimin rotation. All Kaiser-Meyer-Olkin measure (KMO) values for the individual items were well above .5 and the KMO was .944 indicating the data were sufficient for exploratory factor analysis. The Bartlet's test of sphericity (χ^2 (45) = 1506.730, p < .001) was significant. Using an Eigenvalue cut-off of 1.0, there was one factor which explained a cumulative variance of 59.59%. The scree plot confirmed this finding. Finally the communalities were all above .3 confirming each item shared some common variance with other items. Table 18 shows the factor loadings and communalities.

Table 18. Factor loadings and communalities for the Resonant Leadership scale

	Resonant Leadership	Communalities
1. Looks for feedback even when it is difficult to hear.	0.740	0.547
2. Acts on values even if it is at a personal cost.	0.652	0.425
3. Focuses on successes rather than failures.	0.668	0.446
4. Supports teamwork to achieve goals/outcomes.	0.711	0.505
5. Calmly handles stressful situations.	0.787	0.619
6. Actively listens, acknowledges, and then responds to requests and concerns.	0.866	0.750
7. Actively mentors or coaches performance of others.	0.847	0.718
8. Effectively resolves conflicts that arise.	0.829	0.687
9. Engages me in working toward a shared vision.	0.831	0.691
10. Allows me freedom to make important decisions in my work.	0.749	0.560
Eigenvalues	5.950	
% of variance	59.59	

A composite scale was computed, based on the mean of the items. Descriptive statistics are presented in Table 19. The skewness and kurtosis were well tolerable range of ±2.58 for assuming a normal distribution for the sample size and examination of the histograms suggested that the distributions looked approximately normal (see Figure 12, p. 92).

Table 19. Descriptive statistics for the Resonant Leadership scale

	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Resonant leadership	10	3.79 (.693)	-.620	.570	.923

N = 252
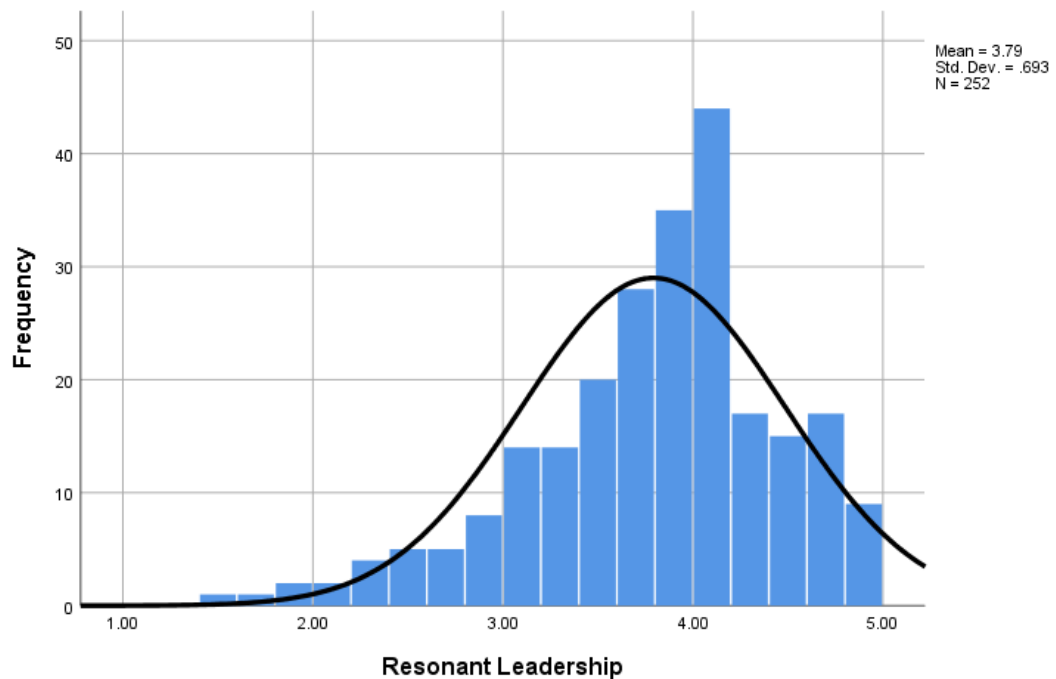
Figure 12. Histogram and normal distribution of Resonant Leadership scale

Leader-member exchange (LMX-7)

Data were subjected to factor analysis using principal component analysis and oblimin rotation. All KMO values for the individual items were well above .5 and the KMO was .913 indicating the data were sufficient for exploratory factor analysis. The Bartlet's test of sphericity (χ^2 (21) = 1070.267, p < .001) was significant. Using an Eigenvalue cut-off of 1.0, there was one factor which explained a cumulative variance of 65.094%. The scree plot confirmed this finding. Finally the communalities were all above .3 confirming each item shared some common variance with other items. Table 20 (p. 93) shows the factor loadings and communalities.

Table 20. Factor loadings and communalities for the Leader-Member Exchange (LMX-7) Scale

	LMX-7	Communailities
1. Do you know where you stand with your leader and do you usually know how satisfied your leader is with what you do?	0.816	0.666
2. How well does your leader understand your job problems and needs?	0.840	0.706
3. How well does your leader recognise your potential?	0.864	0.746
4. Regardless of how much formal authority your leader has built into his or her position, what are the chances that your leader would use his or her power to help you solve problems in your work?	0.835	0.698
5. Again, regardless of how much formal authority your leader has, what are the chances that he or she would 'bail you out' at his or her expense?	0.684	0.467
6. I have enough confidence in my leader that I would defend and justify his or her decision if he or she were not present to do so.	0.744	0.553
7. How would you characterise your working relationship with your leader?	0.849	0.720
Eigenvalues	4.557	
% of variance	65.094	

A composite scale was computed, based on the mean of the items. Descriptive statistics are presented in Table 21. The skewness and kurtosis were well within a tolerable range for assuming a normal distribution and examination of the histograms suggested that the distributions looked approximately normal (see Figure 13, p. 94).

Table 21. Descriptive statistics for the Leader-Member Exchange

	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Leader-Member Exchange	7	3.77 (.816)	-.688	.053	.906

N = 252
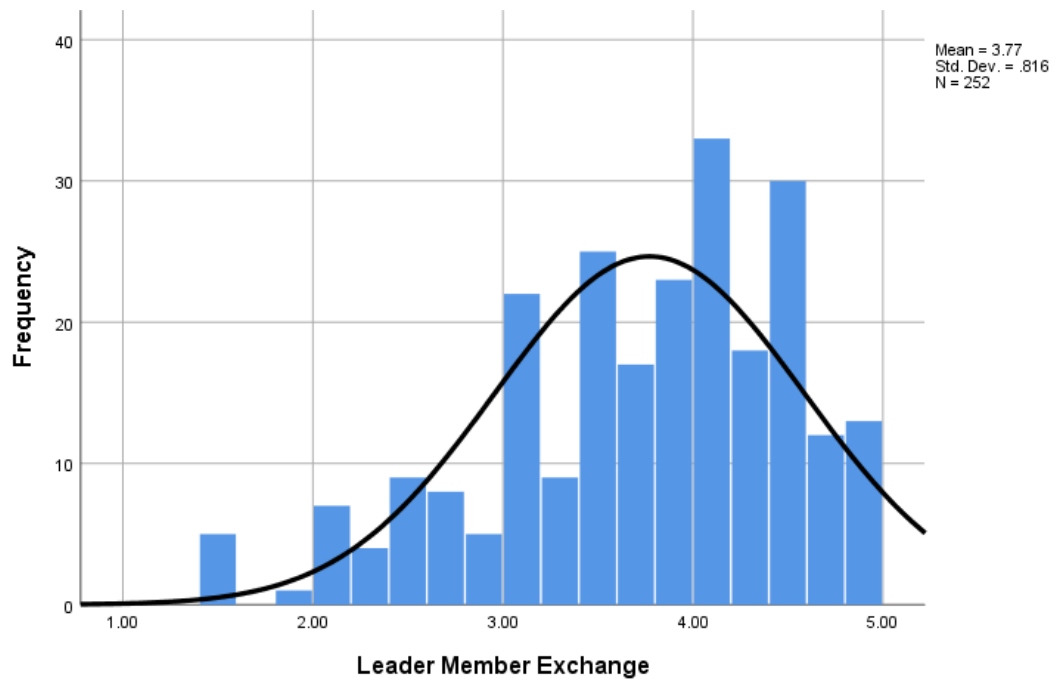
Figure 13. Histogram and normal distribution of Leader-Member Exchange scale

Perception of Organisation Support (POS)

Data were subjected to factor analysis using principal component analysis and oblimin rotation. All KMO values for the individual items were well above .5 and the KMO was .894 indicating the data were sufficient for exploratory factor analysis. The Bartlet's test of sphericity (χ^2 (28) = 1321.32, p < .001) was significant. Using an Eigenvalue cut-off of 1.0, there were two factors which explained a cumulative variance of 73.80%. This conflicts with the scale author's exploratory factor analysis which produced a single factor which explained 48% of the variance and demonstrated a Cronbach alpha of .90 (Eisenberger et al., 1997). The scree plot did not confirm this finding. A subsequent factor analysis was undertaken where the number of factors using principal component analysis and oblimin rotation was fixed to 1. Two communalities were less than .4; item 6 "*If given the opportunity, my organisation would take advantage of me*" and item 8 "*My organisation is willing to help me if I need a special favour*". These items were removed and the factor analysis was repeated.

Fixing the factors to one, explained a cumulative variance of 70.3%. The scree plot (see Figure 14, p .95) confirmed this finding. All KMO values for the individual items were well above .5 and the KMO was .901 indicating the data were sufficient for exploratory factor analysis. The Bartlett's test of sphericity (χ^2 (15) = 1071.51, p < .001) was significant, confirming each item

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shared some common variance with other items.
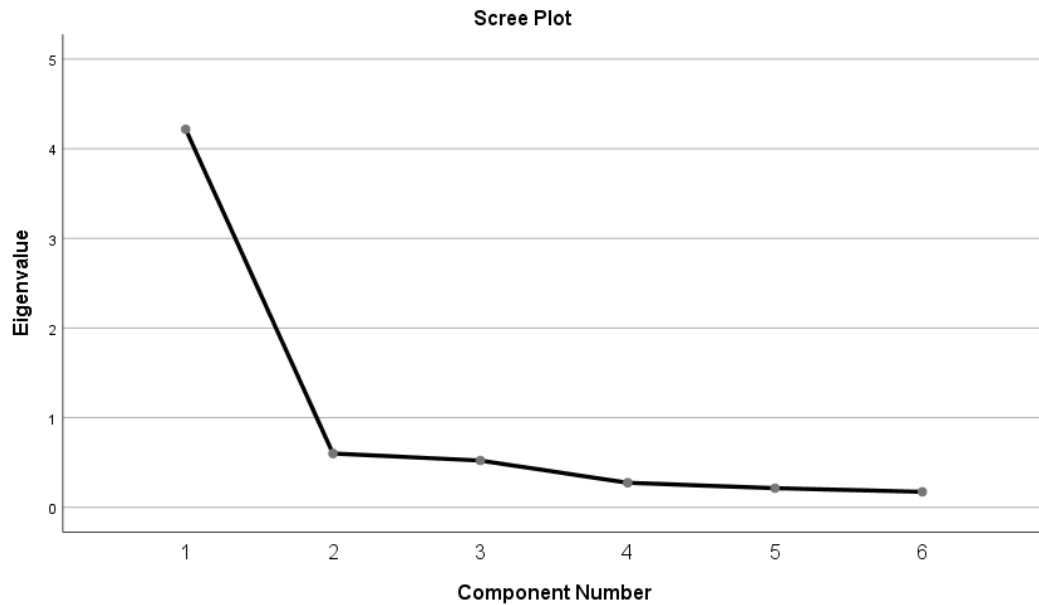
Figure 14. Scree plot of Perception of Organisation Support scale

Table 22 shows the factor loadings and communalities.

Table 22. Factor loadings and communalities for the Perception of Organisation Support scale

	POS	Communalities
1. My organization cares about my opinions[c]	0.875	0.765
2. My organisation really cares about my well-being[c]	0.902	0.814
3. My organisation strongly considers my goals and values[c]	0.901	0.812
4. Help is available from my organisation when I have a problem[c]	0.889	0.791
5. My organisation would forgive an honest mistake on my part[c]	0.750	0.562
7. My organisation shows very little concern for me	0.689	0.474
Eigenvalues	4.218	
% of variance	70.303	

[c]reverse coded

A composite scale was computed, based on the mean of the items. Descriptive

statistics are presented in Table 23. The skewness and kurtosis were well within a tolerable

range for assuming a normal distribution and examination of the histogram suggested that the

distribution looked approximately normal (see Figure 15, p. 96).

Table 23. Descriptive statistics for the Perception of Organisation Support scale

	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Perception of Organisation Support	6	4.47 (1.31)	-.537	.023	.912

N = 252
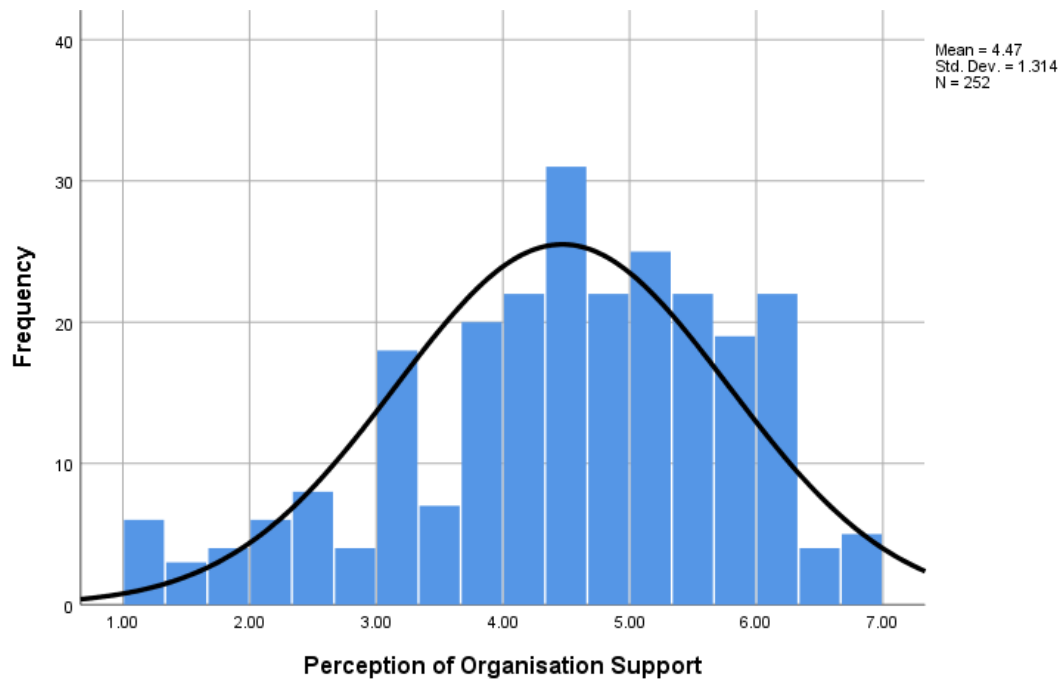
Figure 15. Histogram and normal distribution of Perception of Organisational Support scale

Utrecht Work Engagement Scale (UWES)

Data were subjected to factor analysis using principal component analysis and oblimin rotation. All KMO values for the individual items were well above .5 and the KMO was .851 indicating the data were sufficient for exploratory factor analysis. Using an Eigenvalue cut-off of 1.0, there were two factors that explained a cumulative variance of 62.64%. The scree plot confirmed this finding. Two items were cross loading on each other so they were removed. These items were *"At my work, I feel bursting with energy"* and *"At my job, I feel strong and vigorous".* The factor analysis was repeated and one factor explained a cumulative variance of 55.34%; however, the communality for item 9, *"I get carried away when I am working"* was >.3, so was removed. The final KMO measure was .858 indicating the data were sufficient for exploratory factor analysis. The Bartlett's test of sphericity (χ^2 (15) = 762.768, p < .001) was significant. The single factor explained a cumulative variance of 62.75%. The three factor structure from previous research (Van Bogaert et al., 2012) was not confirmed; however, a one factor model was. This was also the case in a sample of South African nurses (N = 818) (van der Colff & Rothmann, 2009). Van Bogaert et al. (2012) confirmed a three-factor structure in their Belgium sample (N = 357). In larger samples, the 3-factor structure is confirmed as more stable than a single factor. No other studies have been found to be two factors.

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Data were subsequently subjected to factor analysis using principal component analysis and oblimin rotation; however, fixing the factor structure to 1 and 3 factors. When fixing to 3 factors, there were 3 items which were loading on each other. When fixed to one factor, all KMO values for the individual items were well above 0.5 except item nine which was .127, so this item *"I get carried away when I'm working"* was removed. The KMO measure was .850 indicating the data were sufficient for exploratory factor analysis. Fixing to one factor, the Eigenvalues explained a cumulative variance of 55.547%. The scree plot confirmed this finding (see Figure 16). All communalities were <.3. The Bartlett's test of sphericity (χ^2 (28) = 1041.441, $p < .001$) was significant. Table 24 shows the factor loadings and communalities.
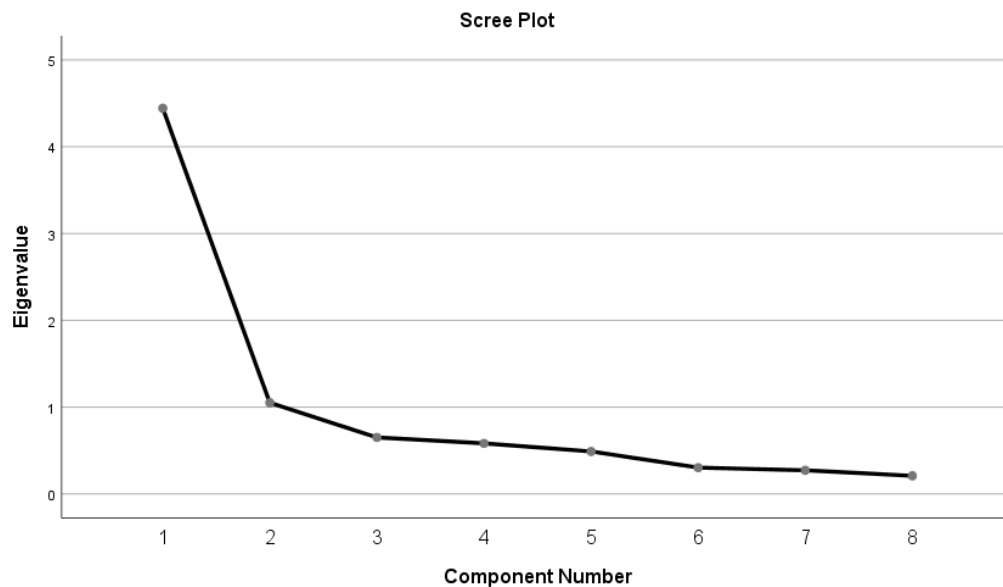
Figure 16. Scree plot of Utrecht Work Engagement scale

Table 24. Factor loadings and communalities for the Utrecht Work Engagement Scale (UWES)

	Component	Communalities
1. At my work, I feel bursting with energy	0.662	0.439
2. At my job, I feel strong and vigorous	0.668	0.447
3. I am enthusiastic about my job	0.873	0.763
4. My job inspires me	0.799	0.638
5. When I get up in the morning, I feel like going to work	0.744	0.553
6. I feel happy when I am working intensely	0.778	0.605
7. I am proud of the work that I do	0.735	0.540
8. I am immersed in my work	0.678	0.459
Eigenvalues	4.444	
% of variance	55.547	
N = 252		

A composite scale was computed, based on the mean of the items. Descriptive statistics are presented in Table 25. The skewness and kurtosis were well within a tolerable range for assuming a normal distribution and examination of the histogram suggested that the distribution looked approximately normal (see Figure 17).

Table 25. Descriptive statistics for the Utrecht Work Engagement Scale (UWES)

	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Utrecht Work Engagement Scale (UWES)	8	4.76 (.836)	-.828	.703	.877

N = 252
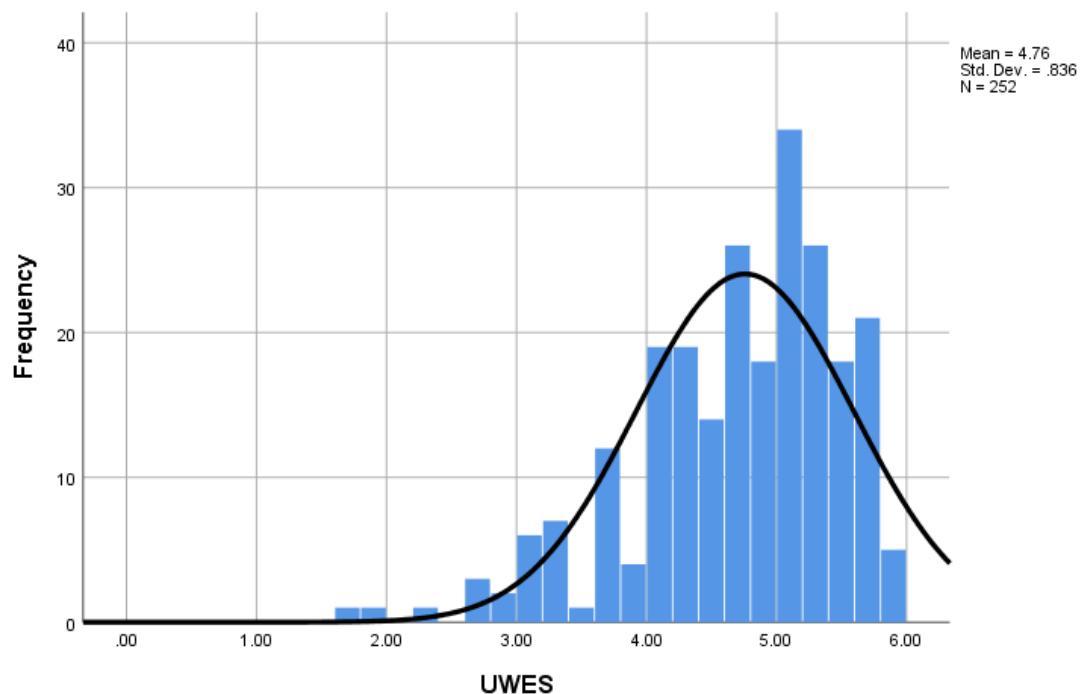
Figure 17. Histogram and normal distribution of Utrecht Work Engagement Scale (UWES)

Unit Care Quality (UCC)

Data were subjected to factor analysis using principal component analysis and oblimin rotation. All KMO values for the individual items were above .5 and the KMO measure was .618, p < .001, was significant although is considered mediocre but not unacceptable (Kaiser, 1974). Using an Eigenvalue cut-off of 1.0, there was one factor that explained a cumulative variance of 49.03%. The scree plot (see Figure 18, p. 99) confirmed this finding. The communalities were above .4 except item 3, *"Overall, over the past year would you say the quality of patient care in your hospital has: improved, remained the same, deteriorated"?* As removing this item resulted

in a KMO measure of .578, indicating the data was 'miserable", no items were removed.

However the issue with the item was noted and re-considered during the confirmatory factor

analysis and testing of the measurement model. Table 26 shows the factor loadings and
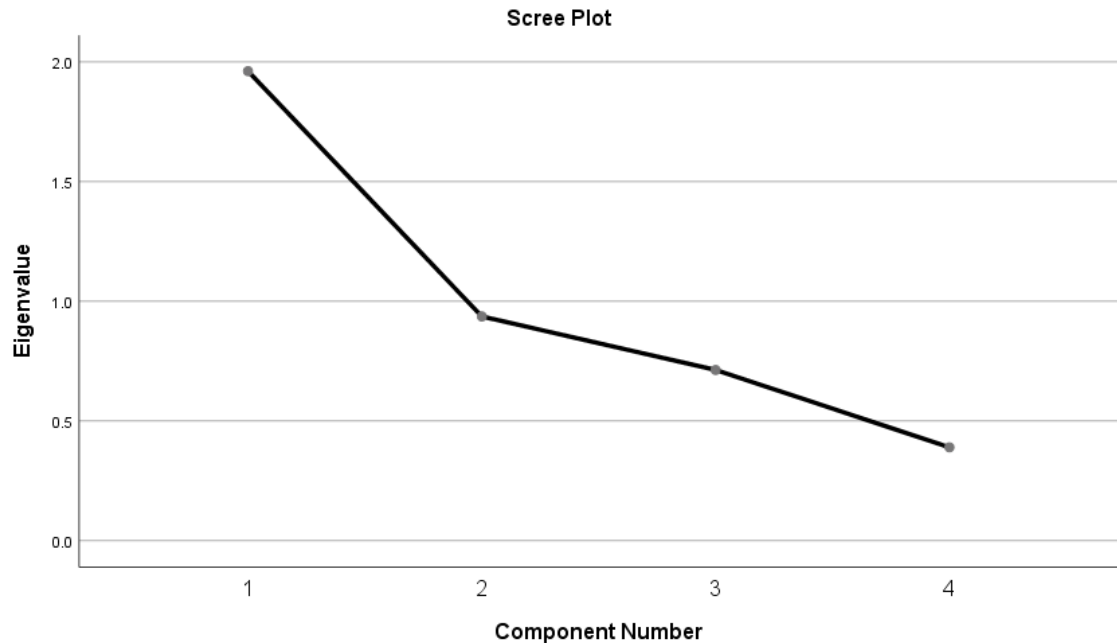
communalities.

Figure 18. Scree plot of Unit Care Quality scale

Table 26. Factor loadings and communalities for the Unit Care Quality scale

	UCC	Communalities
1. In general, how would you describe the quality of nursing care delivered to patients on your unit?	0.841	0.707
2. How would you describe the quality of nursing care delivered on your last shift?	0.754	0.569
3. Overall, over the past year, would you say the quality of patient care in your hospital has improved / remained the same / deteriorated?	0.526	0.277
4. How confident are you that your patients are able to manage their care when discharged from the hospital?	0.639	0.409
Eigenvalues	1.961	
% of variance	49.03	

A composite scale was computed based on the mean of the items. Descriptive statistics

are presented in Table 26. The skewness and kurtosis were well within a tolerable range for

assuming a normal distribution (see Table 27, p. 100) and examination of the histograms

suggested that the distributions looked approximately normal (see Figure 19, p. 100). The

reliability of the scale would be improved to .656 if item 3 was removed. This item was retained

at this stage as subsequent confirmatory analysis would further assess the quality of the factor

structure (Hinkin et al., 1997).

Table 27. Descriptive statistics for the Unit Care Quality scale

	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Unit Care Quality	4	.02 (.668)	-.153	-757	.639[c]

N = 252

[c]standardised
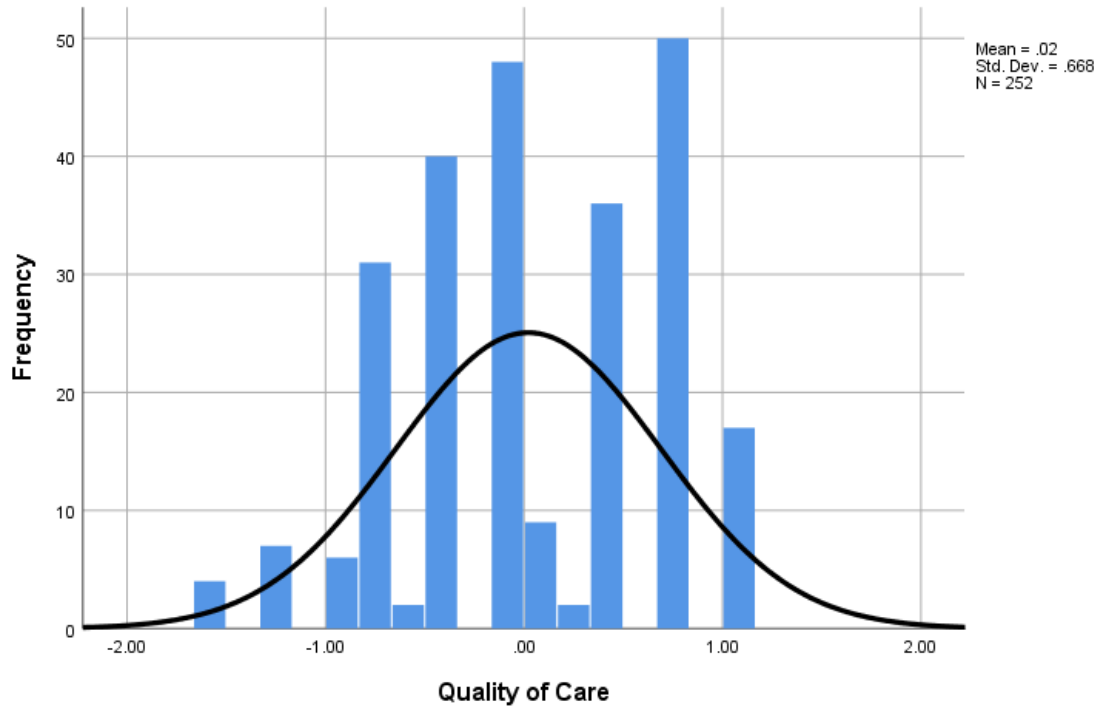
Figure 19. Histogram and normal distribution of Unit Care Quality scale

Marker variables

The data for the Bureaucracy scale and the Willingness to try new food products; DSI scale

were subjected to the same process (see Appendix P). Composite scales were imputed based

on the mean of the items.

Dependent variables

The independent variables were explored using factor analysis (Appendix Q). Factor analysis is

only for multi-indicator reflective factors. The results were problematic and, as they are all

objective, they were deemed not suitable for exploratory or confirmatory factor analyses and

were added to the model as single items.

Psychometric properties

The psychometric properties of the LEON scales, and the correlations of all variables are presented in Table 28 (p. 102). Table 28 demonstrates that resonant leadership, leader-member exchange, perception of organisational support and willingness to try new food products; DSI scales demonstrated excellent internal consistency with Cronbach alpha greater than .90. The UWES demonstrated good internal consistency with Cronbach alpha between .70 to .90. Perception of unit care quality demonstrated acceptable internal consistency as the Cronbach alpha was above .6.

The exploratory factor analysis demonstrated that the scales were all valid, with two issues to note: (i) the UWES had inter-item correlation issues with two items and (ii) the one item of the Unit Care Quality scale had a low communality.

Table 28. Psychometric properties of LEON survey instruments and correlation coefficients of all variables

Scale / item	Mean	SD	Range	Score range	Items	α	1	2	3	4	5	6	7	8	9	10	11
1. RES L	3.793	0.693	1-5	3.50	10	.92											
2. LMX7	3.772	0.816	1-7	3.57	7	.91	.759**										
3. POS	4.468	1.314	1-7	6.00	6	.91	.461**	.430**									
4. UWES	4.750	0.836	0-6	4.38	8	.88	.284**	.370**	.457**								
5. UCC [a]	0.022	0.668	-	2.78	4	.64	.324**	.303**	.291**	.303**							
6. Bureacr	1.825	0.684	1-5	4.00	3	.78	.084	.121	.325**	.137*	.029						
7. InnFood	2.777	0.866	1-5	4.00	6	.94	-.105	-.082	-.127*	-.049	-.077	-.008					
8. FOC	86.329	3.935	0-100	14.00	1	-	-.001	.002	-.010	-.075	.080	.006	.011				
9. Fall	94.041	4.777	0-100	20.19	1	-	.116	.117	.089	-.023	.179**	.024	-.078	.616**			
10. PI	96.169	5.137	0-100	19.66	1	-	.086	.107	.005	.027	-.011	.099	-.038	-.216**	-.046		
11. Compl	99.414	.660	0-100	2.81	1	-	-.079	-.050	-.006	-.048	-.020	-.028	-.019	-.367**	-.264**	.534**	
12. FFT	76.603	15.009	0-100	56.00	1	-	.217**	.103	-.009	-.096	.087	-.048	-.068	.285**	.420**	-.223**	-.202**

N=252
[a] Standardised
*p < .05, **p < .01, ***p < .001

The correlations between the scales were reviewed (see Table 28, p. 102). Significant correlations were noted for all dependent variable scales. A bivariate analysis of the correlations between the constructs and ordinal participant demographics was undertaken (see Table 29) which demonstrated that there were significant correlations between ethnicity and engagement and, age and year in the organisation with perception of organisation support at the 0.01 level. As ethnicity had missing data this could not be included in the SEM. Age and work area were used as control variables.

Table 29. Correlations between LEON constructs and participant demographic

Scale	Employment Status	Age	Year Org	Year practice	Ethnicity
RES L	0.080	0.010	-0.050	-0.034	-0.038
LMX7	0.031	-0.013	-0.080	-0.081	-0.029
POS	0.012	-0.235**	-0.223**	-0.164**	0.224**
UWES	-0.043	0.044	0.003	0.041	0.150*
UCC	-0.070	-0.143*	-0.122	-0.109	0.080
InnFood	0.105	-0.100	-0.028	0.030	-0.108
Bureaucracy	0.038	-0.039	-0.043	-0.112	0.165**

N = 252
[a] Standardised
*p < .05, **p < .01, ***p < .001

Analysis of variance of means

For descriptive purposes, the sample was analysed using a one-way ANOVA to determine if there were differences in sample means for categorical demographics including role, gender, education, and primary work area by each of the LEON constructs. An independent-samples t-test was conducted to compare the means of each scale in for the paper completion and online completion groups.

Role

A one-way ANOVA was conducted to determine if there were differences in sample means for role (Charge Nurse Manager, Registered Nurse, Enrolled Nurse, Health Care Assistant and Ward Clerk or Administrative Assistant). There were no statistically significant differences by role in resonant leadership ($F_{(4, 257)} = 2.086$; p>.083), LMX ($F_{(4, 247)} = 1.167$; p>.326), POS ($F_{(4, 247)} = 1.274$; p>.281) and Unit Care Quality ($F_{(4, 247)} = 2.327$; p>.057). There was a statistically significant difference between groups for engagement as determined by one-way ANOVA ($F_{(4, 247)} = 2.611$; p>.036). The assumption of homogeneity of variances was tested using Levene's test and found to be not significant ($F = 1.049$, p=.382).

Gender

For descriptive purposes, the sample was analysed using a one-way ANOVA to determine if there were differences in sample characteristics by gender (female, male, transgender). There were no statistically significant differences by gender in resonant leadership (F (2, 249) = .075; p = .928), LMX (F (2, 249) = .445; p = .641), POS (F (2, 249) = .591; p =.554), engagement (F (2, 249) = 1.681; p = .188), and Unit Care Quality (F (2, 249) = .162; p = .851).

The assumption of homogeneity of variances was tested using Levene's test and found to be violated for POS (F = 4.499, p = .012) and engagement (F = 4.211, p = .016). The robust test of equality of means was therefore tested using the Welch and Brown Forsythe statistics. No statistically significant differences between means were found. This was also confirmed by the homogenous subsets tables where harmonic means were used to adjust for unequal group sizes.

Education

For descriptive purposes, the sample was analysed using a one-way ANOVA to determine if there were differences in sample characteristics by education (high school, vocational certificate, baccalaureate degree, post-graduate certificate, post graduate diploma, masters degree). There were no statistically significant differences by education in resonant leadership (F (5, 245) = .967; p = .439), LMX (F (5, 245) = 1.312; p = .260), POS (F (5, 245) = 1.251; p =.286), engagement (F (5, 245) = .978; p = .432), and Unit Care Quality (F (5, 245) = 1.442; p = .210). The assumption of homogeneity of variances was tested using Levene's test and found to be met, therefore no statistically significant differences between means were found.

Primary work area

For descriptive purposes, the sample was analysed using a one-way ANOVA to determine if there were differences in sample characteristics by primary work area (medical or surgical, assessment or short stay, mental health, post acute or critical care). There were no statistically significant differences by primary work area in LMX (F (2, 249) = 2.367; p = .096), engagement (F (2, 249) = 1.362; p = .258), and Unit Care Quality (F (2, 249) = .095; p = .910).

Statistically significant differences were found by primary work area in resonant

leadership (F (2, 249) = 3.716; p = .026) and POS (F (2, 249) = 3.350; p =.037). However, the

assumption of homogeneity of variances was tested using Levene's test and found to be met.

No statistically significant differences between means were found.

Paper and online LEON survey completion

There was one significant difference in the means for online (M = 3.69, SD= .849) and

paper (M = 4.03, SD = .713) relating to completion of the leader-member exchange scale;

t(255)= -2.43, p = .016.

Confirmatory Factor Analysis

Confirmatory factor analysis was undertaken on the factors following exploratory factor analysis

using Anderson and Gerbing (1988) two-step approach. One factor congeneric models were

developed and assessed for goodness-of-fit using Hu and Bentler (1999) goodness-of-fit criteria

(see Tables 12, 30, and Appendix R).

Table 30. Goodness-of-fit statistics (Hu & Bentler, 1999) for one factor congeneric models (Appendix R)

	χ^2 (df)	CMIN/DF	p	CFI	TLI	RMSEA	SRMR	PCLOSE
ResL	49.342 (31)	1.592	.019	.988	.980	.049	.035	.509
LMX	13.554 (10)	1.355	.194	.997	.993	.038	.022	.616
POS	10.327 (7)	1.475	.171	.997	.993	.044	.019	.516
UWES	18.038 (16)	1.127	.322	.998	.997	.023	.030	.827
UCC	.0352 (1)	.0352	.553	1.00	1.024	.000	.010	.662
InnF	1.076 (3)	.359	.783	1.00	1.007	.000	.005	.898

N = 252

The goodness-of fit indicators for the Quality of Care Scale indicated it could be

improved by removing UCC_0004 and the Standardised Regression Weights for UCC_0003

and UCC_0004 were .27 and .36 respectively. However, these were left in for the next stage of

confirmatory factor analysis and are noted as a limitation as removing these items resulted in

inadequate degrees of freedom.

Measurement model

The two-step approach suggested by Anderson and Gerbing (1988) was conducted to test the

full measurement model. First the measurement model was assessed for goodness-of-fit and

discriminant and convergent validity, and then the structural equation model was tested with the data.

Step 1 - establish the goodness-of-fit, and discriminant and convergent validity

The initial measurement model for all dependent and independent variables measured using the LEON survey indicated an adequate fit (χ^2 (534, N = 252) = 872.141, p=.000, TLI =.931, CFI =.938, CMIN/DF =1.633, RMSEA = .050, SRMR = .0686, PCLOSE = .468). The 15 covariances from the one-factor congeneric models (see Appendix R) were included in the initial measurement model. Two items were removed from the Quality of Care factor as the standardised regression weight was <.4 which addressed the issues identified in the exploratory factor analysis. These items were:

- Quality of Care 3 "Overall, over the past year would you say the quality of patient care in your hospital has improved / remained the same / deteriorated?"
- Quality of Care 4 "How confident are you that your patients are able to manage their care when discharged from the hospital?"

A review of the modification indices indicated that there was one co-variance to add (e11-e13) which would improve the model (χ^2 471, N = 252) = 882.925, p=.000, TLI =.914, CFI =.923, CMIN/DF =1.875, RMSEA = .059, SRMR = .0563, PCLOSE = .007) (see Figure 20, p. 107).
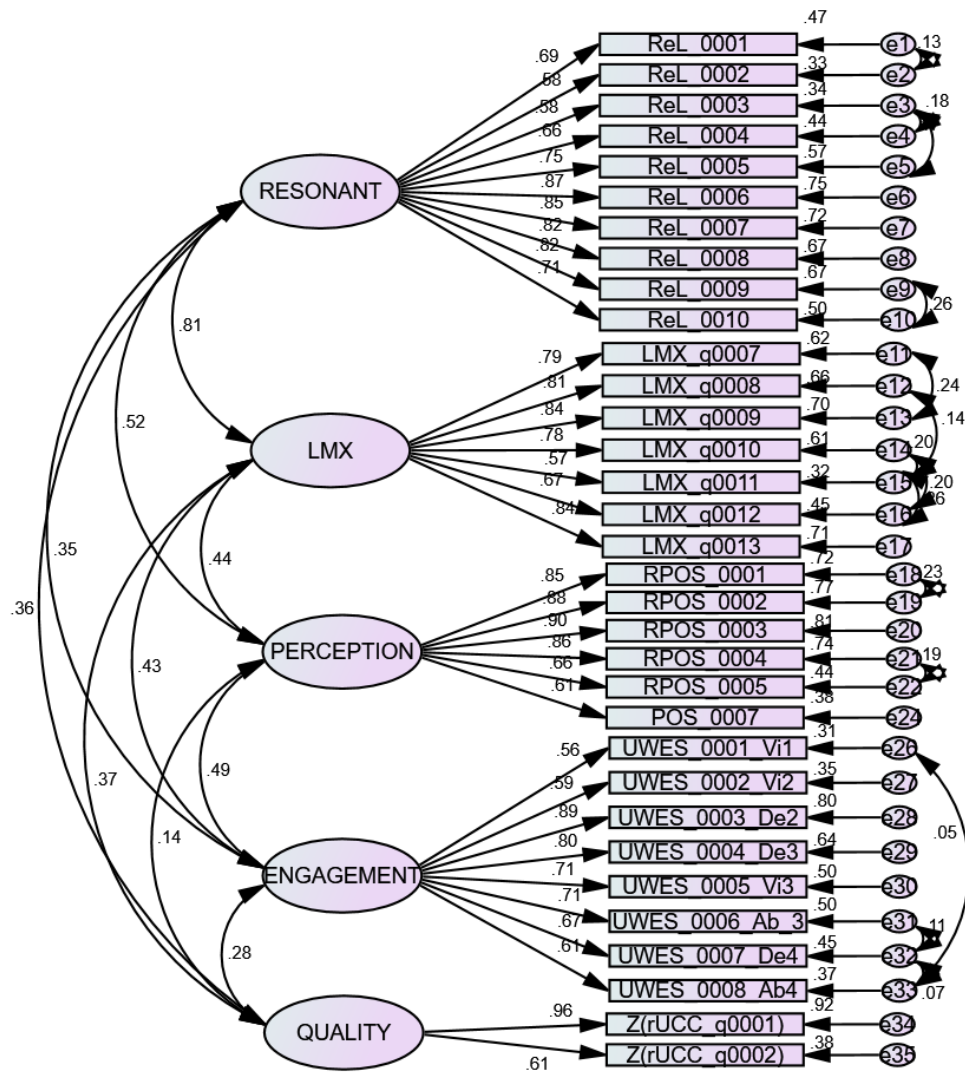
Figure 20. Initial measurement model for the LEON survey

Configural invariance

A configural invariance test was undertaken and adequate goodness-of-fit was obtained when analysing the freely estimated model across two groups (full time and part time) (CFI =.921, RMSEA = .043, SRMR = .0677).

Metric invariance

A metric invariance test was undertaken by constraining the two models to be equal and a conducting a Chi-squared difference test between the fully constrained and unconstrained

models and found them to be invariant p = .136. The measurement model was therefore invariant, both configurally and metrically.

Construct validity

The model was tested for construct validity. Convergent validity is demonstrated by the average variance explained (AVE) all >.5, reliability is evidenced by the composite reliability (CR) where all >.7. Discriminant validity is demonstrated where the square root of the AVE is greater than any of the inter-factor correlations. Validity concerns were addressed by ensuring standardised regression weights were>.4, removing significant covariances and investigating modification indices for cross loading (see Appendix S). As items were removed the number of covariances which remained was reduced to one. The final measurement model demonstrated discriminant and convergent validity (see Table 31) and an excellent fit (see Figure 21, p. 109) (χ^2 (141,N = 252) = 175.834, p=.025, TLI =.984, CFI =.987, CMIN/DF =1.247, RMSEA = .031, SRMR = .0415, PCLOSE =.988) (Gaskin & Lim, 2016b; Hu & Bentler, 1999).

Table 31. Construct validity of the LEON factors

	CR	AVE	MSV	MaxR (H)	RES	LMX	PERCEP	QUAL	ENG
RES	0.879	0.597	0.561	0.905	**0.772**				
LMX	0.811	0.592	0.561	0.842	0.749	**0.769**			
PERCEP	0.916	0.690	0.269	0.935	0.519	0.446	**0.831**		
QUAL	0.783	0.656	0.113	0.943	0.337	0.318	0.126	**0.810**	
ENG	0.845	0.584	0.223	0.899	0.356	0.436	0.473	0.295	**0.764**
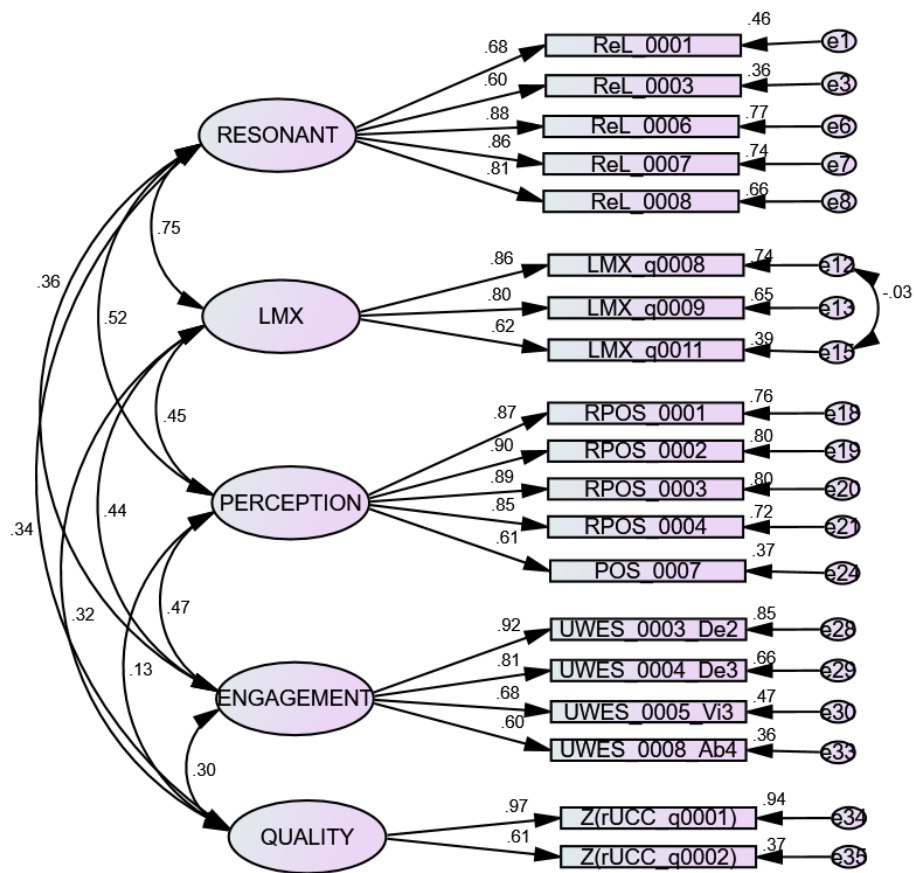
Figure 21. Final measurement model for the LEON survey

Construct replication

The sample was randomly split and these 119 cases were assessed for invariance against the full 252 case data set. A configural invariance test was undertaken and adequate goodness-of-fit was obtained when analysing the freely estimated model across two groups (full time N = 74, and part time N = 45) (CFI =.908, RMSEA = .061, SRMR = .0834). A metric invariance test was undertaken by constraining the two models to be equal and conducting a Chi-squared difference test between the fully constrained and unconstrained models and found them to be invariant p=.300. Discriminant and convergent validity were also replicated.

Common-method bias

The procedural remedies to minimise the risk of common-method bias suggested by Podsakoff et al. (2003) were undertaken during development of the LEON survey. The statistical remedies used for common-method bias are described in this section. These include: Harman's single

factor test, common latent factor, and use of marker variables.

Statistical remedies

Harman's single factor test. The unrotated analysis on all items fixing the number of factors to one on the items following CFA produced an Eigenvalue of 7.212 accounting for 37.96% of the variance. Therefore, according to Harman's single factor test, common-method bias is not evident.

Common latent factor. When a common latent factor was added to the model and the difference in standardised regression weights were reviewed (Chin, 1998), there were seven paths >.2 difference confirming common-method bias was potentially a concern (Podsakoff et al., 2003). Five of the items loaded more on the common latent factor than on their own factor. The chi-squared test for the zero constrained model was significant (i.e., measurable bias was detected) where the difference of chi square was 38.72 and the difference in degrees of freedom was 19 $p = .005$. Therefore a bias distribution test was made (of equal constraints). A test of equal specific bias demonstrated unevenly distributed bias (Gaskin & Lim, 2017).

Marker variables. The common-method variance marker variable, *A Willingness to try new food products DSI scale* was only correlated with the UWES scale $p < .05$; whereas *Bureaucracy* scale was correlated with both POS $p < .01$ and UWES $p < .05$ (see Table 28, p.102). Therefore, the *Willingness to try new food products; DSI scale* was confirmed as the most appropriate scale to investigate common-method variance as it was confirmed as theoretically unrelated to the other constructs unlike the *Bureaucracy* scale (Podsakoff et al., 2003).

The *Willingness to try new food products; DSI scale* was added to the confirmatory factor analysis (see Figure 22, p. 111). The difference of correlations of all constructs between, before, and after including the marker variable was 0.045. As this was less than 0.2, this indicated that common-method variance was not a major issue in the research (Lindell & Whitney, 2001). The correlations between the independent variables and the dependent variable could not be accounted for by the marker variable. An independent-samples t-test was conducted to compare the means of the correlations for the indicators for the measurement model without the marker variable and the measurement model with marker variable. There was

no significant difference in the means for no marker (M=.4055, SD=.164) and with marker (M=.4062, SD=.164) where t(18)=-.010, p=.992.
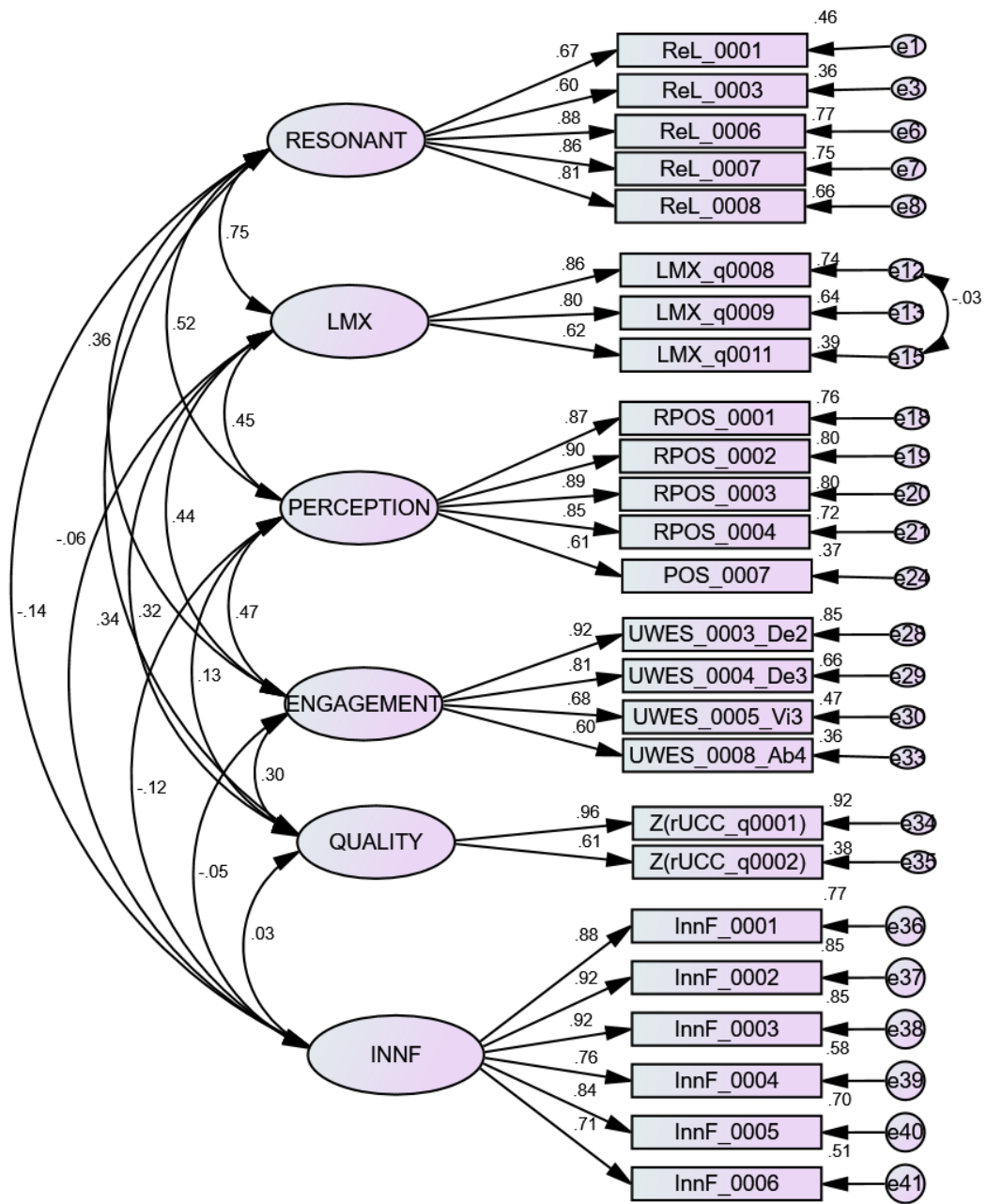
Figure 22. CFA of measurement model including marker variable

In general these tests indicated that common-method bias was not a factor in this research. The confirmatory factor analysis was finalised and factor scores imputed.

Step 2 - Test the structural equation model with the data. Influentials and
multicollinearity tests were undertaken and the initial path structural equation model was
assessed for goodness-of-fit.

Influentials

There were no further cases that produced abnormal Cook's distances >.50, and the highest
value was .084 so there was no change to the sample size.

Multicollinearity

Linear regression was undertaken for each of the independent variables to determine if there
was a proportion of variance explained in the dependent variables. There was no evidence of
multicollinearity as the Variable Inflation Factors (VIF) for all were <.3 and the tolerances were
all >.1. The final measurement model was taken forward to structural equation modeling.

Initial path structural equation model

The initial path model demonstrated a very good fit (χ^2 (31,N = 252) = 47.04, p=.032, TLI
=.961, CFI =.982, CMIN/DF =1.518, RMSEA = .045, SRMR = .033, PCLOSE =.588) (see
Figure 23, p. 113). Paths that were not significant were deleted. The modification indices and
parameter change statistics were reviewed. There were no positive modification indices to
address. Covariances were added between age and POS, and work area and resonant
leadership, because these demographic characteristics were correlated with these constructs
(see Table 29, p. 103).

X2(31,N=252) = 47.043, p=.032, TLI =.961, CFI =.982,
CMIN/DF =1.518, RMSEA = .045, SRMR =.033, PCLOSE =.588).
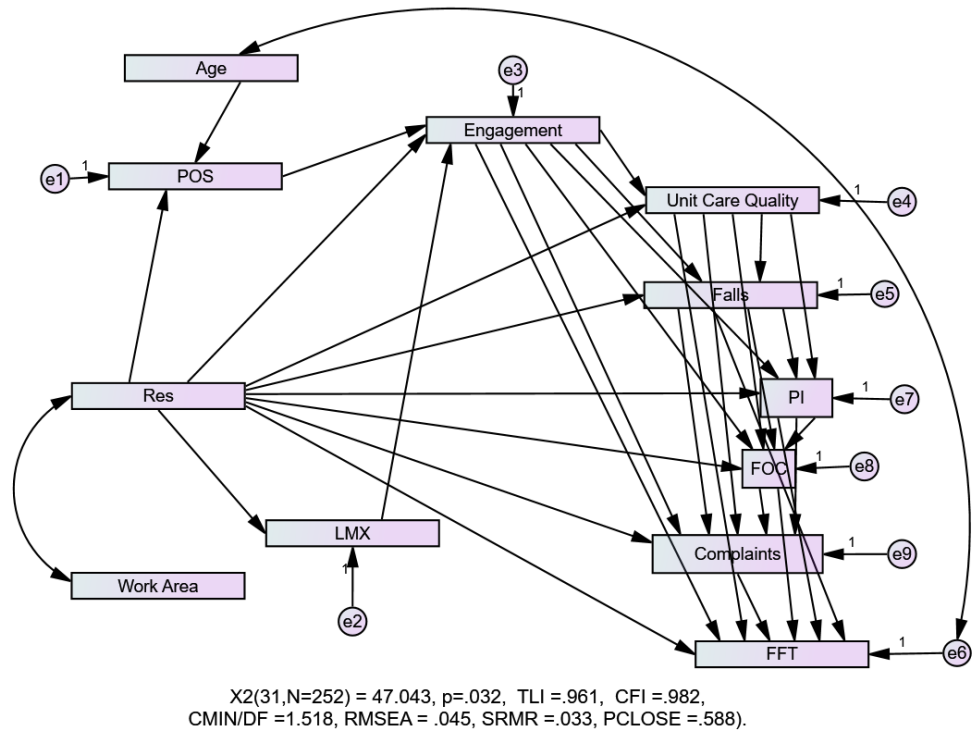
Figure 23. Initial path model

Final path structural equation model

The path model demonstrated an excellent fit to the data (χ^2 (22,N = 252) = 39.048, p=.014,

TLI =.955, CFI =.973, CMIN/DF =1.775, RMSEA = .056, SRMR = .0418, PCLOSE = .344). The

standardised path coefficients can be understood using Cohen's interpretation where absolute

values from .10 to .30 is considered small, .30 to.50 medium, and.50 and above considered

large (Cohen, 1988, 1992; Kline, 2016).

Large path coefficients were produced for positive relationships between resonant

leadership and POS (β = .55, *p* < 0.001) and resonant leadership and LMX (β = .82, *p* < 0.001)

(see Figure 24, p. 115). Discriminant validity had previously been obtained and multicollinearity

error discounted.

Three paths produced medium path coefficients such as the positive relationship

between POS and engagement (β = .40, *p* < 0.001), the positive relationship between LMX and

engagement (β =.46, *p* < 0.001) and the negative relationship between falls and the friends and

family test (β = -.41, *p* < 0.001) (see Figure 24, p. 115).

Small path coefficients were noted in five relationships. The positive relationships

between resonant leadership and nurse reported quality (β =.28, *p* < 0.001), engagement and

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nurse reported quality (β =.21, $p < 0.001$) and resonant leadership and friends and family test (β =.20, $p < 0.01$) were all above .20. The negative relationship between nurse reported quality and falls was a small effect (effect size = -.14, $p < 0.05$). Two small unexpected negative relationships were identified; a negative relationship between resonant leadership and engagement (β = -.21, $p < 0.05$) and between engagement and friends and family test (β = -.13, $p < 0.05$) (see Figure 24, p. 115).

The final model (see Figure 24, p. 115) demonstrated partial support for the hypotheses (see Table 32, p. 116). Three of the institutional data variables; pressure injuries, FOC, and complaints were not retained in the final model due to non-statistical significant paths. Higher resonant leadership was associated with both positive exchange relationships and a positive organisational support culture; however, was associated with lower levels of engagement (β =-.21, $p < 0.05$) which was unexpected. Positive exchange relationships were associated with higher levels of engagement, as was a positive organisational support culture. Higher resonant leadership was associated with higher perceptions of unit care quality, and better patient experience (measured by the friends and family test). Higher levels of engagement was associated with worse patient experience (β = -.13, $p < 0.05$) which was unexpected. Higher levels of nurse reported care were associated with lower rates of falls. Lower falls rates were associated with better patient experience.
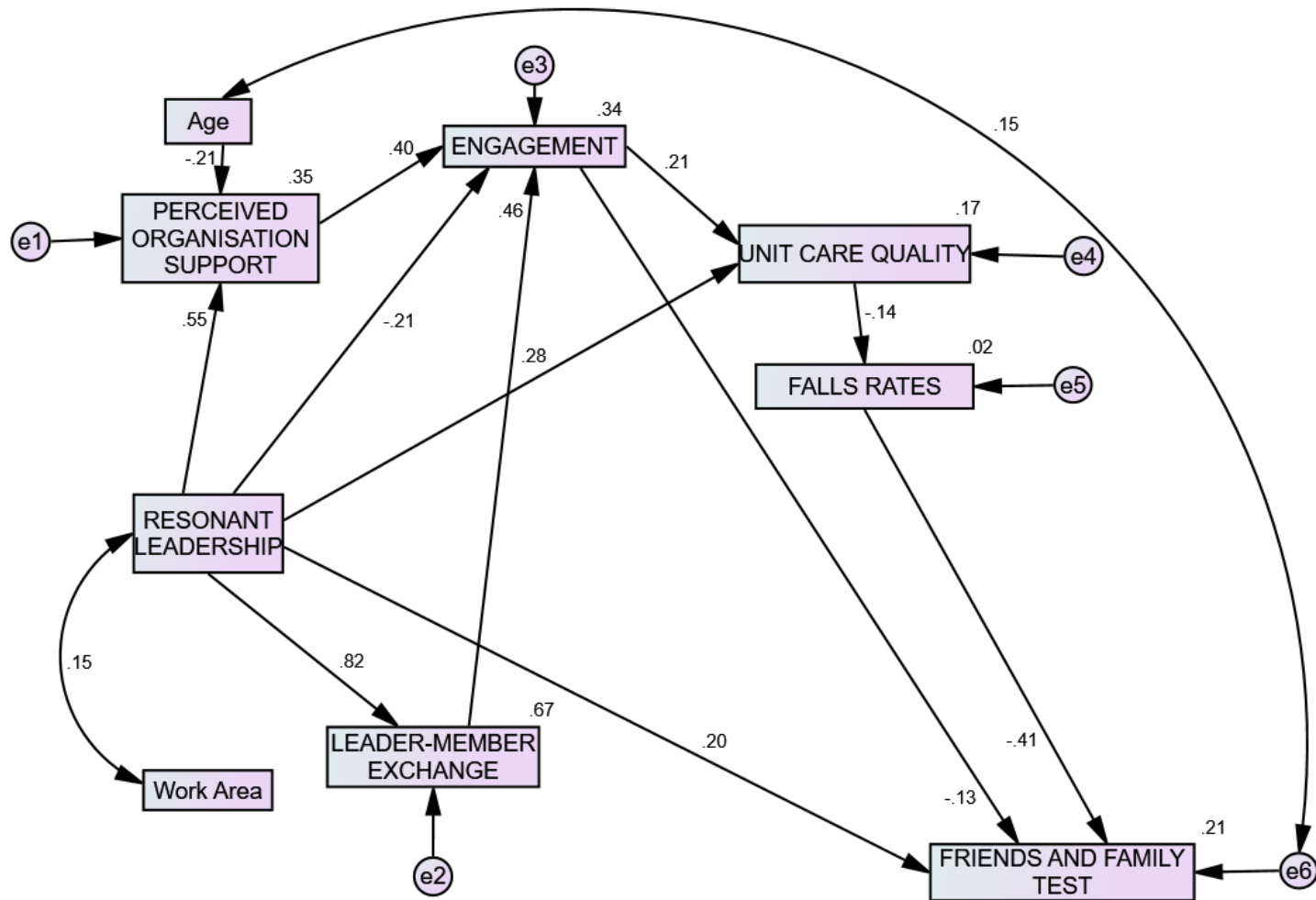
Figure 24. Final path model

Table 32. Parameter estimate of final model and hypothesis summary

Hn	Hypothesis	p	Standard Regression Weight	Hn supported
H1	There is a positive relationship between resonant leadership and exchange relationships.	***	0.820	Yes
H2	There is a positive relationship between resonant leadership and organisational support culture.	***	0.555	Yes
H3	There is a positive relationship between resonant leadership and engagement.	*	-0.213	No-negative
H4	There is a positive relationship between exchange relationships and engagement.	***	0.460	Yes
H5	There is a positive relationship between organizational support culture and engagement.	***	0.401	Yes
H6	There is a positive relationship between resonant leadership and perceptions of unit care quality.	***	0.279	Yes
H7	There is a negative relationship between resonant leadership and falls.	-	-	No
H8	There is a negative relationship between resonant leadership and pressure injuries.	-	-	No
H9	There is a positive relationship between resonant leadership and standards of fundamental care.	-	-	No
H10	There is a negative relationship between resonant leadership and complaints.	-	-	No
H11	There is a positive relationship between resonant leadership and friends and family test.	**	0.198	Yes
H12	There is a positive relationship between level of engagement and perceptions of unit care quality.	***	0.208	Yes
H13	There is a negative relationship between level of engagement and falls.	-	-	No
H14	There is a negative relationship between level of engagement and pressure injuries.	-	-	No
H15	There is a positive relationship between level of engagement and standards of fundamental care.	-	-	No
H16	There is a negative relationship between level of engagement and complaints.	-	-	No
H17	There is a positive relationship between level of engagement and friends and family test.	*	-0.129	No-negative
H18	There is a negative relationship between nurse reported care and falls.	*	-0.142	Yes
H19	There is a positive relationship between falls and pressure injuries.	-	-	No
H20	There is a negative relationship between pressure injuries and standards of fundamental care.	-	-	No
H21	There is a negative relationship between standards of fundamental care and complaints.	-	-	No
H22	There is a negative relationship between complaints and Friends and Family Test.	-	-	No
H23	There is a negative relationship between nurse reported care and pressure injuries.	-	-	No
H24	There is a positive relationship between nurse reported care and standards of fundamental care.	-	-	No
H25	There is a negative relationship between perceptions of unit care quality and complaints.	-	-	No
H26	There is a positive relationship between perceptions of unit care quality and friends and family test.	-	-	No
H27	There is a negative relationship between falls and standards of fundamental care.	-	-	No
H28	There is a positive relationship between falls and complaints.	-	-	No
H29	There is a negative relationship between falls and friends and family test.	***	-0.406	Yes
H30	There is a positive relationship between pressure injuries and complaints.	-	-	No

Hn	Hypothesis	p	Standard Regression Weight	Hn supported
H31	There is a positive relationship between standards of fundamental care and friends and family test.	-	-	No
H32	There is a negative relationship between pressure injuries and friends and family test.	-	-	No

Note: *p < 0.05; **p < 0.01;***p < 0.001.

Path and mediation analysis

Path and mediation analysis was conducted using PROCESSv2.16.3 in IBM SPSS Statistics 25.0 ® (Hayes, 2013) with a 95% confidence interval using 10,000 bootstrap samples. Analysis using PROCESS produces unstandardized coefficients. The model represented a serial multiple model with four mediators (Hayes Model 6) (See Figure 25, p. 119). Four indirect mediated paths were identified.

The direct effect of Resonant Leadership on Friends and Family Test is positive and statistically significant, $c' = 8.65$, t(248) = 3.249, p=.001. The first indirect effect is the specific indirect effect of Resonant Leadership on the Friends and Family Test through Perception of Organisation Support, Unit Care Quality and Falls (See Tables 33 and 35, p. 122) i.e.: RESL → *POS→ QUAL → FALLS →FFT*. Estimated as a_{1a} a_4 d_{24} = 1.052(-.173)-.699 = -.161. This specific indirect effect is negative and statistically significant because the bootstrap confidence interval (-.481, -.002) is entirely below zero (Hayes, 2013).

Table 33. Indirect effect of Resonant Leadership on Friends and Family Test through POS, QUAL and FALLS

Path	Effect	(boot SE)	95% boot	
			lower CI	upper CCI
RES → POS → QUAL → FALLS → FFT	-.161	(.115)	-.481	-.003
RES → POS → ENG → QUAL → FALLS → FFT	.079	(.056)	.002	.242
RES → QUAL → FALLS → FFT	.463	(.322)	.005	1.317

SE: standard error; lower CI = lower confidence interval; upper CI = upper confidence interval; Unstandardized regression coefficients are reported. Bootstrap standard errors in parentheses. Bootstrap sample size = 10,000.
*p < 0.05; **p < 0.01;***p < 0.001

The second indirect effect is the specific indirect effect of Resonant Leadership on the Friends and Family Test through perception of organisation support, engagement, Unit Care Quality and falls (See Tables 33 and 35, p. 122) i.e.: RESL → *POS→ ENG → QUAL → FALLS →FFT.* Estimated as a_{1a} d_{21} d_{23} d_{24} = 1.052(.288,.296)-.699 =.079, this specific indirect effect is also significantly positive because the bootstrap confidence interval (.002, .242) is entirely above zero (Hayes, 2013).
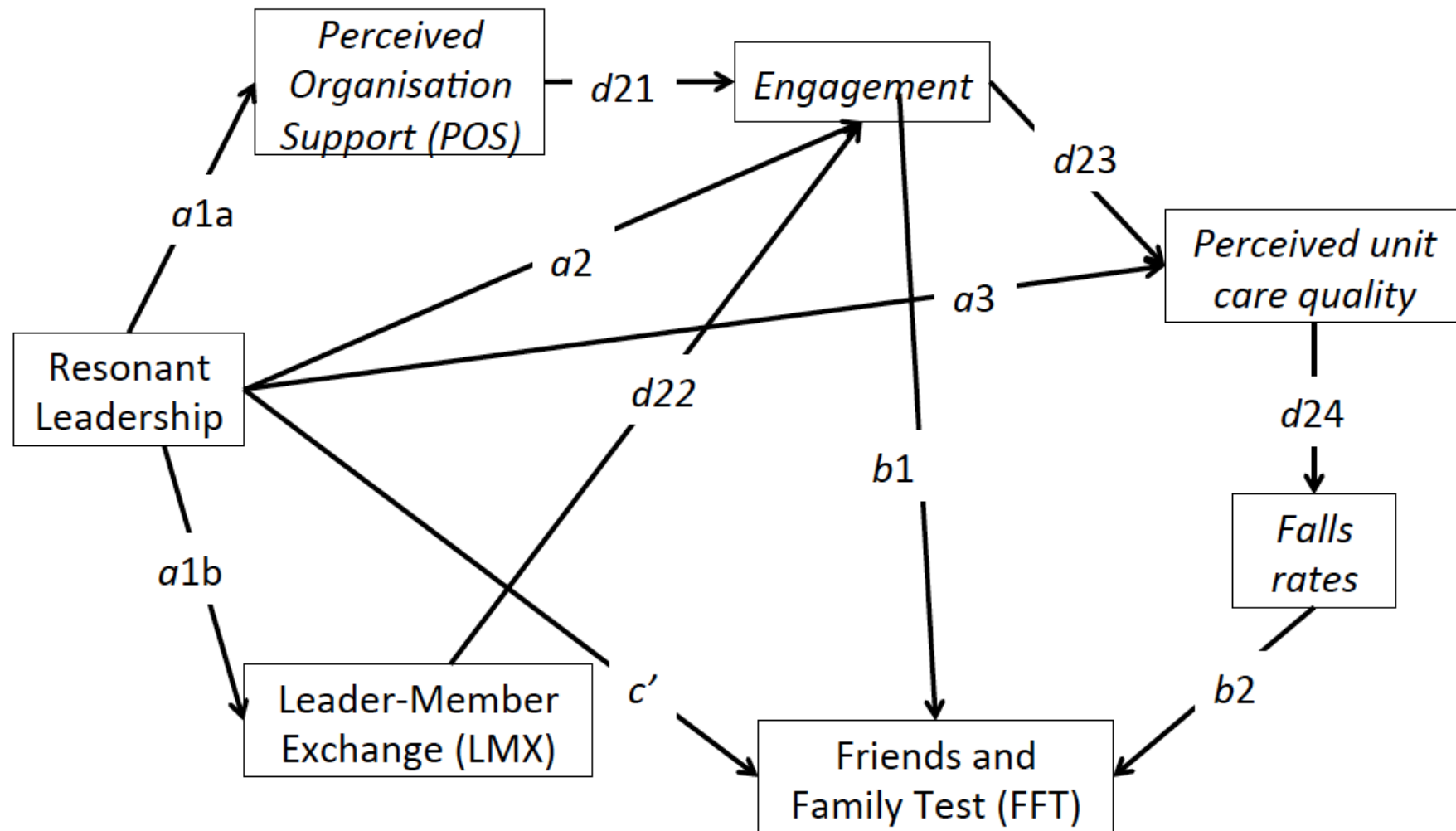
Figure 25. Serial multiple model with four mediators

The third effect is the specific indirect effect of Resonant Leadership on the Friends and Family Test through perceptions of unit care quality and falls (See Tables 33, p. 118 and 35, p. 122) i.e.: RESL → *QUAL* → *FALLS* → *FFT.* Estimated as $a_3\, d_{24}$ = .523(-.699) = .463. This specific indirect effect is significantly positive because the bootstrap confidence interval (.005, 1.317) is also entirely above zero (Hayes, 2013).

The final indirect effect is the specific indirect effect of Resonant Leadership on the Friends and Family Test through LMX, engagement, Unit Care Quality and falls (See Tables 34 and 36, p. 122) i.e.: RESL → *LMX*→ *ENG* → *QUAL* → *FALLS* →*FFT.* Estimated as $a_{1b}\, d_{22}\, d_{23}\, d_{24}$ = 1.110(.480,.296)-.699 =.140. This specific indirect effect is also significantly positive because the bootstrap confidence interval (.003, .451) is entirely above zero (Hayes, 2013).

Table 34. Indirect effect of Resonant Leadership on Friends and Family Test through LMX, QUAL and FALLS

Path	Effect	(boot SE)	95% boot lower CI	upper CI
RES → LMX → ENG → QUAL → FALLS → FFT	.140	(.106)	.003	.451
RES → QUAL → FALLS → FFT	.463	(.318)	.004	1.294

SE: standard error; lower CI = lower confidence interval; upper CI = upper confidence interval; Unstandardized regression coefficients are reported. Bootstrap standard errors in parentheses. Bootstrap sample size = 10,000.
*p < 0.05; **p < 0.01;***p < 0.001

The indirect effect of Resonant Leadership on Friends and Family Test through engagement i.e.: RESL → *ENG* → *FFT,* estimated as $a_2\, b_1$ = -324(-1.322) =.4284 is not significant because the bootstrap confidence interval passes through zero (-.3694, 2.0352) (Hayes, 2013). Age was used as a control variable and demonstrated significant paths to engagement and perceptions of unit care quality p < .05 and to POS p < .001.

Summary of Chapter Four

The results of analysis of the data in accordance with the analysis plan outlined in Chapter Three were described in this chapter. The final numbers of cases was 252 after conducting missing value analyses and removing 54 cases where there was no unit, 58 cases where there was no available institutional data and three cases which were outliers. The required power was achieved for goodness-of-fit analysis. The respondent demographics were broadly similar to the sample population.

The exploratory factor analysis undertaken on the LEON scales demonstrated acceptable KMO and eigenvalues which explained adequate cumulative variance. The psychometric properties of the LEON scales were broadly similar to previous research. The confirmatory factor analysis was undertaken generating one factor congeneric models which demonstrated excellent goodness-of-fit. Issues identified with Unit Care Quality were resolved during exploration of construct validity. The two-step approach was used to test the full measurement model. Sixteen items were removed to produce the final measurement model which demonstrated convergent and discriminant validity. Tests for common-method variance were undertaken and shown not to be an issue for this research. Influentials and multicolliearity were assessed and found to be insignificant.

Age and work area were used as control variables in the structural equation modeling. The initial path model demonstrated very good fit. The path model was finalised by removing non-significant paths (Byrne, 2016). Three of the institutional data variables; pressure injuries, FOC, and complaints were not retained in the final model due to insignificant paths. As a result, nine of the 33 direct paths were confirmed. Four indirect mediated paths were also confirmed.

The next chapter will discuss the results in context of the research purpose and objectives and identify key findings. The results will be interpreted and the significance and limitations of the study will be described.

Table 35. Regression Coefficients and model summary information for the serial multiple mediator model depicted in Figure 25 controlling for LMX and age

		POS Coeff.	p		ENG Coeff.	p		QUAL Coeff.	p		FALLs Coeff.	p		FFT Coeff.	p
RESL	a_{1a}	1.052	***	a_2	-.331	**	a_3	.523	**	a_4	-.125	-	c'	8.65	**
POS		-	-	d_{21}	.288	***		-.173	**		-.162	-		-1.25	-
LMX				d_{22}	.480	***		.046	-		-.568	-		-2.873	-
ENG		-	-		-	-	d_{23}	.296	***		.622	-	b_1	-1.257	-
QUAL		-	-		-	-		-	-	d_{24}	-.699	-		1.210	-
FALLS		-	-		-	-		-	-		-	-	b_2	-1.267	***
Constant	$^I POS$	1.591	**	$^I ENG$	2.117	***	$^I QUAL$	-1.799	***	$^I FALLS$	6.060	**	$^I FFT$	77.817	***
		R^2=.674			R^2=.361			R^2=.212			R^2=.039			R^2=.248	
		$F(3,248)=170.919$***			$F(4,247)=34.819$***			$F(5,246)=13.194$***			$F(6,245)=1.641$			$F(7,244)=11.522$***	

Unstandardized regression coefficients are reported. Bootstrap sample size = 10,000.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 36. Regression Coefficients and model summary information for the serial multiple mediator model depicted in Figure 25 controlling for POS and age

		LMX Coeff.	p		ENG Coeff.	p		QUAL Coeff.	p		FALLs Coeff.	p		FFT Coeff.	p
RESL	a_{1b}	1.110	***	a_2	-.331	**	a_3	.523	**	a_4	-.125	-	c'	8.65	**
POS		-	-	d_{21}	.288	***		-.173	**		-.162	-		-1.25	-
LMX				d_{22}	.480	***		.046	-		-.568	-		-2.873	-
ENG		-	-		-	-	d_{23}	.296	***		.622	-	b_1	-1.257	-
QUAL		-	-		-	-		-	-	d_{24}	-.699	-		1.210	-
FALLS		-	-		-	-		-	-		-	-	b_2	-1.267	***
Constant	$^I POS$	.4973	**	$^I ENG$	2.117	***	$^I QUAL$	-1.799	***	$^I FALLS$	6.060	**	$^I FFT$	77.817	***
		R^2=.674			R^2=.361			R^2=.212			R^2=.039			R^2=.248	
		$F(3,248)=170.919$***			$F(4,247)=34.819$***			$F(5,246)=13.194$***			$F(6,245)=1.641$			$F(7,244)=11.522$***	

Unstandardized regression coefficients are reported. Bootstrap sample size = 10,000.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Chapter 5: Discussion

Introduction

The research proposed to determine, validate, and revise the *a-priori* model that engagement mediates the relationship between leadership style, relationships, and organisational support, and nurse-sensitive indicators. The aim was to establish a relationship between leadership and patient outcomes, and identify the antecedents of engagement which could be modified to improve patient outcomes. In this chapter I discuss the findings in the context of existing literature and the theoretical perspective. I present key findings and the significance of the study prior to a more in-depth discussion and interpretation of the results. A section on Māori experiences is included prior to the summary of the chapter.

Key Findings

This research has resulted in five key findings. Firstly, engagement has been confirmed to mediate the relationship between resonant leadership, POS and LMX (separate paths) and nurse reported quality, patient outcomes (falls) and patient satisfaction (FFT).

Secondly, for the first time, resonant leadership has been investigated and is supported to be the starting point to improve patient outcomes. This is particularly relevant given the relational nature of the leadership style in question, the antecedents, and FFT. Resonant leadership also has a direct effect on both perceptions of unit care quality and FFT.

Thirdly, all positive indirect paths to FFT were mediated by perceptions of unit care quality and falls rates, and supports the patient safety and patient experience impact of resonant leadership. The social exchange relationships which emerge from the leadership interactions and resulting obligations and reciprocity suggest an exchange of service to the patients which improves care.

Fourthly, perceptions of unit care quality are a core element in the indirect paths leading to improved falls and FFT. This is an example of the reciprocal nature of several principles of social exchange such as rules and norms of exchanges and exchange resources. As leaders demonstrate the emotional intelligence characteristics of resonant leadership, this translates into increased-perceived organisation support and higher quality leader-member exchanges.

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The mutual investment of the employer and employee is reflected in a higher perception of the quality of the work delivered and is an example of reciprocity as a folk belief or moral norm (Cropanzano & Mitchell, 2005). When higher work engagement, and therefore commitment, is an antecedent of perceptions of unit care quality, this also reflects reciprocity.

Finally, the data supports POS and LMX as antecedents of work engagement when investigating institutionally collected falls and FFT. This extends the findings from other research of POS and LMX as antecedents of work engagement in relation to staff outcomes such as job satisfaction (Shacklock et al., 2013), team commitment (Dasgupta, 2016), affective commitment (Brunetto et al., 2014; Dasgupta, 2016), and intention to quit (Brunetto et al., 2014).

In this chapter I will discuss and interpret the results by reflecting on the hypotheses in the context of SET. The findings will be described and how these relate to the existing body of knowledge. The new knowledge gained as a result of the research will be explained.

Significance of the Study

Nursing leadership is often held to account for the quality of patient care (Department of Health, 2014; Francis Inquiry, 2013; Healthcare Commission, 2006, 2007, 2009) despite an absence of primary research relating nursing leadership to outcome indicators recognised as being influenced by nursing practice. This research reinforces a positive frame for leaders to employ as they seek to improve the experience of staff and patients. Engagement and its antecedents are supported as having positive effects on perceptions of unit care quality, falls rates, and FFT. This builds on the work of Dromey (2014) and West and Dawson (2012) who previously drew conclusions on the role that staff experience and engagement play from large correlated data sets and provides evidence that this is the case in an acute inpatient setting in New Zealand. This research also confirms that when social exchange relationships exist, engagement is not always present in the indirect path. This is an important finding for healthcare which places a heavy emphasis on staff engagement surveys as a means to better patient care. This research has implications for improvement of quality care through improved falls rates and FFT as it does suggest that resonant leadership is a core antecedent and a modifiable factor.

Acknowledgement of the influence of high or low quality social exchanges on patient outcomes in highly relational contexts such as acute inpatient settings is also of significance.

Interpretation of Results

I applied the findings using the lens of SET, to create a model of leadership and engagement of nurses to improve patient safety (falls) and satisfaction (see Figure 26, p. 127).

The effect of resonant leadership on perceived organisational support leader-member relationships and outcomes

Staff who reported high resonant leadership also reported a strong perception of organisation support and experiencing high-quality exchange relationships. This in turn led to higher reported Unit Care Quality, lower rates of falls, and higher FFT. The finding that resonant leadership influenced the quality of the leader-member relationship, reinforces findings by Squires et al. (2010). In addition, it extends the existing literature by suggesting an obligatory reciprocal relationship between high reported resonant leadership and high perception of organisation support, high perceptions of unit care quality, and actual lower falls (falls rate) and higher FFT. This is reflective of interdependent transactions resulting in high-quality relationships and a moral norm of perceived organisation support (Cropanzano & Mitchell, 2005).

The use of both POS and LMX in this research reflected the importance of both the quality of the social exchange with the employer (POS) and the quality of the LMX relationships, and acknowledged that both constructs predicted different job outcomes (Cropanzano & Mitchell, 2005). This is, however, not the case when investigating patient outcomes and patient experience, as the findings in this research indicate that separate paths (LMX and POS) both lead ultimately to the same job outcome: improved falls rates and FFT.

The effect of resonant leadership on engagement

A small negative effect was found of resonant leadership on engagement. That is, when resonant leadership was high, work engagement was low. This is inconsistent with one other study (Van Bogaert et al., 2012). Although the same constructs and theoretical perspective were not used, the practice environment Dutch translation of the NWI-R-v1 was used to investigate the relationships between workload, work engagement, job outcomes and

assessments of Unit Care Quality in nursing personnel in psychiatric hospitals (Van Bogaert et al., 2012). A small positive effect was demonstrated between nurse management at the unit level, one factor of the NWI-R-v1, and dedication, one factor of the UWES scale.

There is no social exchange occurring in the direct path between resonant leadership and engagement with no support being offered, or leader-member relationships. This suggests that resonant leadership is not on its own a social exchange and must be combined with key relational antecedents to result in obligated or reciprocated commitment in the form of work engagement. This is further reinforced by the direct small positive effect of resonant leadership on FFT.

The influence of perceived organisation support on engagement

The findings supported the hypothesis that POS was positively associated with levels of engagement with a moderate effect reflecting greater commitment to the organisation in return for greater support. This was similar to findings from previous research (Brunetto et al., 2014; Dasgupta, 2016; Saks, 2006; Shacklock et al., 2013; Trinchero et al., 2013). Cropanzano and Mitchell (2005) considered that POS support reflected the quality of the social exchange and Saks (2006) suggested that one way employees can repay their organization for the support provided is with their level of engagement as they are obliged to reciprocate. This is an example of an emerging social exchange relationship where support leads to greater commitment (Cropanzano & Mitchell, 2005).
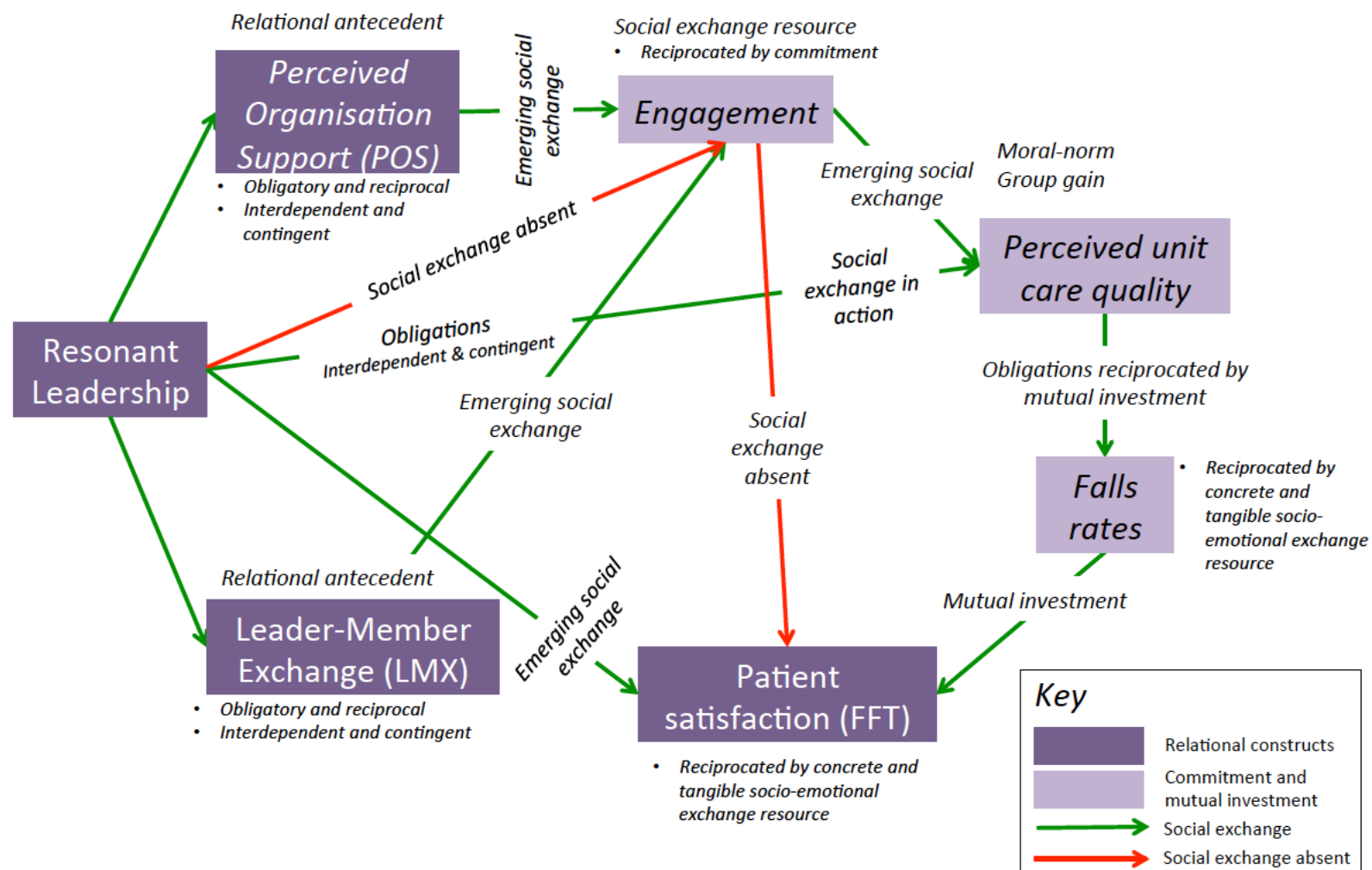
Figure 26. Model of leadership and engagement of nurses to improve patient safety (falls) and satisfaction using the lens of social exchange theory

The influence of leader-member relationships on engagement

The findings of this research supported the hypothesis that LMX relationships are positively associated with levels of engagement with a moderate effect reflecting greater commitment to the organisation in return for higher quality relationships. This was similar to findings of other researchers (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013). Previous research demonstrated that high-quality LMXs positively influence components of organisational commitment such as job commitment (Laschinger et al., 2009), intention to leave (Squires et al., 2010), and affective commitment (Brunetto et al., 2011). Cropanzano and Mitchell (2005) suggested that LMX reflected the quality of the relationship where high-quality relationships with their manager led to greater job performance and employees doing favours for them. The exchange is also considered to be altered by the relationship. In this context a high-quality relationship is expected to result in reciprocity of higher levels of engagement. This is another example of an emerging social exchange relationship where leader support leads to greater nurse commitment (Cropanzano & Mitchell, 2005).

The effect of resonant leadership on nurse reported quality care, patient outcomes, and patient experience

The findings demonstrated indirect relationships between resonant leadership and FFT predominantly through the path which involved perceptions of unit care quality, falls rates, and FFT. However there was one negative indirect effect from resonant leadership to FFT. The driver of this negative indirect path appears to be a negative direct path from perception of organisation support to perception of quality care. This direct path was not hypothesised as it does not reflect a process of social exchange. There were also two small direct effects; from resonant leadership to perceptions of unit care quality and resonant leadership to FFT. The direct positive effect of resonant leadership on perceptions of unit care quality is an example of social exchange in action, reflecting the interdependent nature of social exchanges as they are contingent on others as interactions lead to obligations (Cropanzano & Mitchell, 2005). The mutual investment of the employer, employee, and patient reflected the reciprocity of the socio-emotional exchange resource and the norm of the social exchange (Cropanzano & Mitchell, 2005).

Only two studies were identified which investigated the relationship of resonant leadership to some form of patient outcomes (Cummings, Midodzi, et al., 2010; Squires et al., 2010). Resonant leadership was significantly related to lower mortality (Cummings, Midodzi, et al., 2010) and reduced nurse reported frequency of exposure to medication error (Squires et al., 2010). Purdy et al. (2010) used inpatient satisfaction in a multi-level study using the *Patient Satisfaction with Nursing Care Quality Questionnaire* (Spence Laschinger, McGillis Hall, Pedersen, & Almost, 2005). This survey was administered as part of the research, had no readily available information, and there were no significant relationships to patient satisfaction identified. Therefore, this research offers new information confirming resonant leadership does have a direct relationship with the social exchange resource of socio-emotional mutual investment for staff and patients. It also indicates that when resonant leadership is high, staff report higher quality care being delivered, resulting in lower falls rates and higher FFT.

Resonant leadership, as a relational leadership style in the context of SET, was expected to lead to both high-quality relationships with staff and patients, which were interdependent and contingent on each other. Although no research existed which investigated the experience of patients, it was hypothesised that the reciprocity of the staff member's perception of Unit Care Quality, would extend onwards to the social relationship with the patient. This reflected the mutual investment of the socio-emotional exchange between staff member and patient in the relationship, which is an underpinning exchange resource in SET (Cropanzano & Mitchell, 2005). This reflected a unique approach to understanding the relationship between leadership, patient outcomes, and patient experience.

The mediating effect of engagement on resonant leadership on nurse reported quality care, patient outcomes, and patient experience

Engagement, Unit Care Quality, and falls mediated the positive relationships between resonant leadership, POS and FFT, or LMX and FFT. In addition, three further paths were identified which were all mediated by Unit Care Quality, and falls, from resonant leadership to FFT. There were no significant paths between standards of fundamental care and any antecedent, and therefore was not retained in the final model.

There was an absence of research demonstrating work engagement using the UWES (Schaufeli & Bakker, 2004) as a mediator of the positive relationship between resonant leadership, positive exchange relationships, and organisational support. Job and organisation engagement were hypothesised to mediate antecedents including POS and staff outcome related consequences such as job satisfaction, and this mediation was partially confirmed (Saks, 2006). Job satisfaction was hypothesised and confirmed to mediate the relationship between nurses' exchange relationship with their supervisors and their intentions to quit (Shacklock et al., 2013). This model included LMX, POS, and UWES as antecedents. Only two studies were identified which involved resonant leadership and mediation paths (Bawafaa et al., 2015; Squires et al., 2010). Bawafaa et al. (2015) investigated the mediating role of structural empowerment on resonant leadership and job satisfaction. Squires et al. (2010) hypothesised that both work environment and safety climate mediate the influence of leader relationships on nurse reported adverse events.

Using the lens of SET, work engagement is considered a form of obligated reciprocal commitment in the form of organisational commitment with respect to POS, or job performance with respect to high-quality exchange relationships. These are forms of emerging social exchange relationships (Cropanzano & Mitchell, 2005). The reciprocity of the staff member's commitment, as work engagement, would be positively associated with perception of the Unit Care Quality, and this would extend onwards to the social relationship with the patient. This further reflects the mutual investment of the socio-emotional exchange between staff member and the patient in the relationship, which is an underpinning exchange resource in SET (Cropanzano & Mitchell, 2005).

These findings confirmed the role of work engagement as an emerging social exchange in reciprocity to organisation support, and quality of leader relationships. The mutual investment by the staff member and the patient in the social exchange results in all parties reporting higher experiences and is also negatively associated with the rate of falls. However, it also indicates that perceptions of unit care quality and falls are both mediators between the antecedents of resonant leadership and workplace relationships, and the dependant variable, FFT.

Organisational support and exchange relationships

The findings confirmed that resonant leadership and engagement are positively associated with the quality of the exchange relationship with a strong effect. This research was the first to investigate all path relationships in one study and the first to consider patient outcomes. There was limited research investigating the relationship between exchange relationships and resonant leadership (Squires et al., 2010) and with POS and engagement (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013). Squires et al. (2010) found a strong positive relationship between resonant leadership and exchange relationships which is consistent with this research. Moderate path effects for POS to engagement were also consistent with previous findings (Brunetto et al., 2014; Shacklock et al., 2013). However this research also demonstrated a moderate effect for the path between exchange relationships and engagement. This may be due to the dependent variables reflecting quality related indicators rather than staff related outcomes where only small effects were found (Brunetto et al., 2014; Shacklock et al., 2013).

This research confirmed findings by Squires et al. (2010) who also demonstrated that the relational nature of the leadership style is associated with the quality of the exchange relationships which are developed. The findings extend understanding of the exchange relationship's effect beyond staff outcomes, such as safety climate and interactional justice, to patient outcomes (See Tables 33, p. 118 and 34, p. 120). The mediated path from resonant leadership to friends and family test, through exchange relationships, engagement, perceptions of unit care quality and falls, confirmed exchange relationships are associated with job performance (Cropanzano & Mitchell, 2005).

As noted previously, in the context of social exchange, interactions lead to obligations which influence the quality of the relationship. This suggests that when leaders demonstrate resonant leadership characteristics such as self-awareness, self-management, social awareness, and relationship management (McKee & Massimilian, 2006), this will lead to high-quality exchanges. Each exchange initiation and response is, therefore, likely to continue to shape the quality of the relationship and the emerging social exchange relationship (Cropanzano & Mitchell, 2005; Graen & Uhl-Bien, 1995). Exchange relationships have been

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shown to predict job performance and organisational citizenship behaviour (Cropanzano &

Mitchell, 2005).

The current research provides new knowledge of the mediating role of work

engagement as a social exchange resource, and the resulting positive association with the

dependent variable perception of unit care quality, the small negative association with falls, and

the medium negative association with FFT. Work engagement could be considered to be an

exchange resource that is developed as a result of leader-member social exchanges. The

potential to identify modifiable factors which influence lower falls rates is of significant interest to

nurse leaders.

Dependent Variables

The research aimed to investigate real world problems for nurse leaders and, in so doing, made

use of institutional data which was already being collected to evaluate the quality of care being

provided. These nurse-sensitive indicators were falls, pressure injuries, patient perceptions

(complaints) as rates per 1000 bed days, FOC and patient satisfaction, using the Friends and

Family Test, as composite percentages.

Perceptions of unit care quality

The findings confirm that perceptions of unit care quality was positively associated with

resonant leadership, higher levels of engagement, and patient outcomes. Although there was

no direct path from perceptions of unit care quality to patient satisfaction, all indirect paths

involved perceptions of unit care quality. Several researchers have used perceptions of unit

care quality to understand relationships between staffing (Aiken et al., 2002; Aiken et al., 2008),

care or practice environments (Aiken et al., 2008; Patrician, Shang, et al., 2010; Spence

Laschinger, 2008; Tourangeau et al., 2007; Van Bogaert et al., 2012), nurse capacity (Kutney-

Lee et al., 2009), work engagement (Van Bogaert et al., 2013), empowerment (Purdy et al.,

2010; Spence Laschinger, 2008), quality of care and staff factors such as burnout (Patrician,

Shang, et al., 2010; Tourangeau et al., 2007; Van Bogaert et al., 2013), exhaustion and

turnover (Van Bogaert et al., 2010), job satisfaction (Patrician, Shang, et al., 2010; Spence

Laschinger, 2008; Tourangeau et al., 2007; Van Bogaert et al., 2010) and intention to leave

(Patrician, Shang, et al., 2010). These studies were predominantly from the Magnet perspective and none used SET as a lens. Only one of these studies used perceptions of unit care quality in conjunction with actual incidence of a patient safety measure (Purdy et al., 2010). In her multilevel study investigating empowerment, Purdy et al. (2010) gathered falls per 1000 bed days data from a hospital database and assessed patient satisfaction using a patient survey administered specifically for the research. Psychological empowerment had a strong effect on perceptions of unit care quality at the individual level and at the work unit level; falls rates were predicted by group processes and structural empowerment. There were no significant relationships with patient satisfaction.

High resonant leadership and high work engagement was expected to be reciprocated by the staff member's perception of high quality care being delivered as a moral norm. This makes theoretical sense; however, in itself, does not necessarily translate to improved Unit Care Quality. Following the assumptions of SET, greater perceptions of Unit Care Quality may be the reciprocated outcome of high engagement and high resonant leadership, associated with 'feeling' better about the work delivered. This may even be seen as group gain as a rule, or norm of the exchange, where the group as a whole feels better about the work, or perhaps altruistic about the nature of their work. These positive feelings about the Unit Care Quality delivered can be hypothesised to improve the culture and tone on the ward. The findings in this research extended this understanding as this perception of high-quality care appears to be associated with improved patient outcomes.

Patient outcomes

The findings confirm support for a direct relationship between perceptions of unit care quality and falls, and falls and patient experience. The pressure injuries, standards of fundamental care, and complaints variables were unable to be retained in the final path model due to non-significant paths. Although there was no direct relationship confirmed between resonant leadership and patient outcomes, or engagement and patient outcomes, all four mediated paths included falls.

The predominant approach in the literature was to investigate nurse-sensitive indicators using nurse reported exposure to adverse events (Kutney-Lee et al., 2009; Purdy et al., 2010;

Squires et al., 2010; Wong et al., 2015). Although the common-method bias possible within this self-report approach can be addressed, the use of institutional data in this research is an example of a procedural remedy for common-method bias (Podsakoff et al., 2003) and more applicable in nursing practice-related inquiry. Some researchers have, therefore, used some of these nurse-sensitive indicators from existing institutional data such as falls (Boyle, 2004; Capuano et al., 2005; Donaldson, Bolton, et al., 2005; Dubois, D'amour, Tchouaket, et al., 2013; Duffield et al., 2011; He et al., 2016; Houser, 2003; Purdy et al., 2010) and pressure injuries (Boyle, 2004; Capuano et al., 2005; Donaldson, Bolton, et al., 2005; Dubois, D'amour, Tchouaket, et al., 2013; He et al., 2016). Although Capuano et al. (2005) demonstrated a negative significant path from staff expertise to patient outcomes, how the outcomes in that research were treated, that is as individual indicators or a single composite, was not described. As noted previously, Purdy et al. (2010) demonstrated that empowering work processes had a positive relationship with lower fall rates.

From a social exchange perspective, falls and pressure injuries were considered to be concrete and tangible examples of exchange resources (Cropanzano & Mitchell, 2005). This results from a greater mutual investment in the nurse-patient relationship as a result of the social exchange where the nurse provides a different level of nursing service or care and attentiveness to the patient, thereby preventing falls and pressure injuries. However, until this research, falls in hospital using institutional data had not been understood to be related to social exchanges or identified as important in mediated paths between resonant leadership and patient experience. These findings suggest that from a relational perspective, mutual investment in relationships by staff and patients creates a safer environment.

Standards of fundamental care

The findings reflect the exploratory nature of this study and the early understanding of this metric. All paths involving standards of fundamental care were unable to be retained in the final path model due to non-significant paths. However, the metric was considered highly relevant within SET as it comprised a high number of relational indicators. Higher standards, as evidence of job performance, were anticipated to reflect emerging social exchange relationships where high-quality relationships exist, and commitment, such as work engagement exists as a

reciprocal obligation. The only research using the same fundamentals of care indicator was very recent and was used in the context of demonstrating quality improvement (Parr et al., 2018). As the metric is very comprehensive it may be a possible composite reflecting the breadth of quality of nursing care, from a social exchange perspective; however, further research is required.

Patient experience

These findings demonstrated that the Friends and Family Test was useful to understand the role of resonant leadership and falls, within a SET perspective, and offers rationale for future research. A direct path from resonant leadership to the Friends and Family Test and three positive indirect paths from resonant leadership to the Friends and Family Test were found. One of these was mediated through POS and engagement. Another was mediated through LMX and engagement. Perceptions of unit care quality and falls always mediated the path from resonant leadership to Friends and Family Test. Hypothesised paths leading to complaints and fundamentals of care were not supported in the final path model due to non-significant findings. This research suggests that complaints is not an effective indicator for use in social exchange research. There was no direct path from perceptions of unit care quality to Friends and Family Test. There was an unexpected negative relationship (small effect) between engagement and Friends and Family Test.

Evidence of using existing patient experience data such as complaints and patient satisfaction surveys was rare in the literature. In a recent systematic review of the use of patient experience reported measures (PREMs) for quality improvement, most data were collected by survey; however, it was not easy to identify the impact the data had on quality improvement (Gleeson et al., 2016). It is not surprising that calls such as those from Robert, Cornwell, and Black (2018) to cease the mandatory collection of surveys, such as the Friends and Family Test, exist if such data is not evidenced to improve quality care. This research suggests researchers should make use of existing patient experience data to investigate the impact of interventions to raise the level of resonant leadership, extend the understanding of the breadth of patient experience which reflects all interactions and the culture and tone of organisations (The Beryl Institute, 2018), and to demonstrate improvement. Perhaps more importantly, the

accompanying lower falls and higher FFT indicated that this was not solely restricted to how people feel about their work and practice environment, but is translated to higher quality, particularly patient satisfaction. This is an example of a concrete exchange resource and makes theoretical sense.

These findings suggest that engagement was not on its own a social exchange, and must be combined with key relational antecedents to result in obligated or reciprocated commitment in the form of work engagement. However when the path from resonant leadership to Friends and Family Test was mediated through either POS or leader-member relationships and engagement, and perceptions of unit care quality and falls, the path was significant and positive. This research provides further evidence of the role of high-quality exchange relationships or high levels of organisation support as they are reciprocated by work engagement and perceptions of the unit care quality. These are also examples of emerging social exchanges which lead to job performance (Cropanzano & Mitchell, 2005).

SET explains these hypotheses due to the relational nature of patient experience (Wolf et al., 2014), resonant leadership (Cummings, 2004), and the reciprocal nature of engagement (Saks, 2006). The rating of the quality of care delivered, as previously suggested, may be seen as group gain as a rule or norm of the exchange, where the group as a whole feels better about the work. These positive feelings about the quality of care developed through interactions with each other and patients may lead to obligations to provide high-quality care and develop high-quality relationships with patients.

Theoretical Contributions

In this section I present six areas where this research has made important theoretical contributions. These draw on the research as a unique study applied in the practice environment of a DHB in New Zealand. The contributions provide insights about the generation and use of the LEON survey and institutional data in this research. It also extends the understanding of nursing being a highly relational profession and that for healthcare leaders and professionals, attention should be paid to both staff and patient experience to improve patient

outcomes. The section concludes with consideration of the challenges progressing our understanding and, therefore, actions to shape leadership which is relevant for Māori.

Exploratory nature of the research

This research was exploratory in its nature as it was undertaken in an acute nursing setting in one New Zealand DHB. It considered the whole nursing and clerical team as contributing to the quality of patient outcomes within the theoretical and positive frame of SET.

The LEON survey. The constructs used within the LEON survey are not known to have been used together previously. The research extends previous research underpinned by SET, and incorporated resonant leadership and LMX (Squires et al., 2010), POS and engagement (Trinchero et al., 2013) and LMX, POS and engagement (Brunetto et al., 2014; Dasgupta, 2016; Shacklock et al., 2013). Both work engagement and perceptions of unit care quality have been used in combination with the NWI-R-v1 (Van Bogaert et al., 2013). The LEON survey could be utilised in further studies or operationally by nurse leaders.

Use of institutional data. The research used readily available and identified nurse-sensitive indicators (Dubois, D'Amour, Pomey, et al., 2013), as well as an emerging important composite measure of quality in the acute setting (Parr et al., 2018) which were captured in the process of monitoring the quality of care. Existing research used administrative data to determine a variety of patient outcomes: 30-day mortality (Aiken et al., 2008; Cummings, Midodzi, et al., 2010), medication errors (Paquet et al., 2013; Vogus & Sutcliffe, 2007), falls (Boyle, 2004; Capuano et al., 2005; Dubois, D'amour, Tchouaket, et al., 2013; Duffield et al., 2011), and pressure injuries (Boyle, 2004; Dubois, D'amour, Tchouaket, et al., 2013; Duffield et al., 2011). Nurse reported quality of care has also been combined with falls/1000 bed days (Purdy et al., 2010). The use of readily available institutional data is of significance for nurse leaders as the use of consistent language and metrics provides them with the opportunity to reflect on their own services and leaders. It also provides an opportunity for the impact of nursing practice on patient safety, clinical effectiveness, and patient experience to be more visible.

The relational nature of nursing

Resonant leadership is an emerging important leadership style in professions where high levels of relational energy are required such as those in health care. In addition, the New Zealand culture places great emphasis on the importance of relationships through the influence of Te Tiriti o Waitangi (Treaty of Waitangi) as a key relationship between Māori tangata whenua (people of the land), and the Crown (Came et al., 2018).

This research extends our understanding of the importance of attending to relational competence of leaders on patient safety and patient satisfaction. Previous research has demonstrated associations with lower 30-day mortality (Cummings, Midodzi, et al., 2010) or high leader-member relationships (Squires et al., 2010). However this research supports the relational reality of the mediated paths from resonant leadership. These paths are all associated with a reciprocal obligation to be more positive about the care provided which, in turn, is associated with mutual investment in the nursing care provided. This exchange resource is socio-emotional, and concrete, in its nature, and is also associated with reciprocity by the patient.

The interdependence of staff and patient experience

Patient safety and patient satisfaction are confirmed as being interdependent and contingent on staff experience. This is demonstrated through the relational antecedents of POS and LMX which individually are associated with greater organisational commitment, and an obligation to be mutually invested in nursing work. Conclusions had previously been drawn about the important relationship between staff experience and patient experience but this used correlations of institutional macro-level data (Dromey, 2014; West & Dawson, 2012). Other literature reflecting the importance of the experience of staff often focused on staff outcomes (Aiken et al., 2002; Patrician, Shang, et al., 2010; Spence Laschinger, 2008; Van Bogaert, Clarke, et al., 2009) rather than investigating the associations between staff engagement in their work, as a predictor of patient outcomes. The research suggests that combining efforts to improve staff experience and patient experience is not only theoretically plausible, but evidenced.

Māori experiences

Research about Māori nurse experiences of leadership was limited. This research was not intended to investigate Māori nurse experiences of leadership, nor was the survey design expected to yield higher proportions of Māori participation. However the Māori review of the research proposal recommended a synthesis of Māori experiences and a hui (meeting) to present results.

The target sample included 22 Māori (2%) and survey respondents included six Māori nurses (2.2%). However, the study sample population did not reflect the population of Māori in the community (9.7%) (Waitemata District Health Board, 2015). This is an important factor when considering the importance of cultural and relational competency in health and is reflected by national targets to increase the proportion of Māori working in health professions (Ministry of Health, 2015).

Summary of Chapter Five

The findings have been discussed in context of the hypotheses, SET, existing evidence in the field and new knowledge generated as a result of this research. Five key findings were identified:

1. Engagement was confirmed as mediating the relationship between resonant leadership, POS and LMX (separate paths), and nurse reported quality, patient outcomes, and patient satisfaction.

2. Resonant leadership has been demonstrated to be the starting point to improve patient outcomes.

3. All indirect paths to patient satisfaction were mediated by perceptions of unit care quality and falls rates, and the patient safety and patient experience impact of resonant leadership is confirmed.

4. Perceptions of unit care quality was a core element in the indirect paths leading to improved patient outcomes and patient satisfaction.

5. POS and LMX were confirmed as antecedents of work engagement when investigating institutionally collected patient outcomes (falls) and patient satisfaction (FFT).

Resonant leadership influenced the quality of the leader-member relationship, confirmed the relationship of high reported resonant leadership, greater perception of organisation support, higher perceptions of unit care quality, and actual greater patient outcomes (falls rate) and patient satisfaction (FFT). Resonant leadership was not on its own a social exchange and must be combined with key relational antecedents to result in obligated or reciprocated commitment in the form of work engagement. When resonant leadership was high, staff reported higher quality care being delivered, and was associated with lower falls rates and higher patient satisfaction.

Findings from previous research have been replicated to demonstrate that POS and LMX relationships are positively associated with levels of engagement reflecting greater commitment to the organisation in return for higher quality relationships. Engagement, Unit Care Quality, and falls mediated the positive relationships between resonant leadership and either POS or LMX and patient satisfaction. Perceptions of unit care quality and falls mediated resonant leadership, relationships, and patient satisfaction confirming that social exchange relationships are associated with job performance. Falls in hospital were evidenced as related to social exchanges and suggested that mutual investment in relationships by staff and patients creates a safer environment. There were no significant paths between pressure injuries, standards of fundamental care, and complaints. However, existing patient experience data can be used in research. How people feel about their work and practice environment relationships is important, and appears to be associated with improved patient outcomes.

I presented the theoretical contribution of the research. The research is of significance to nurse leaders as it was the first time the LEON constructs have been used in New Zealand, using practical and available nurse-sensitive indicators. It provides a positive frame and new understanding of the importance of resonant leadership and relationships at ward level to support engagement of staff and perceptions of quality care. The research extends the understanding of the relational nature of nursing, and the interdependence between staff experience and patient experience. The ability to add new understanding to Māori experiences was limited by the small proportion of Maori nurses in the sampling frame and missing ethnicity data. The next chapter will explore the theoretical contribution, managerial implications for

practice and nursing leadership, and explore the strengths and limitations of the research.

Implications for future research and opportunities to share the findings will be identified.

Chapter 6: Conclusions and Recommendations

Introduction

In this, the final chapter, I consider the research implications for practice and leadership. I present the strengths and limitations of the study and implications for future research. I describe the approach I will take to disseminate the findings locally, nationally, and internationally. I also reflect on the journey towards the Doctorate of Health Science (DHSc), the learning I have gained and how this will make a difference to my practice as a nurse executive and the staff and patients I work with. The chapter concludes with a brief summary of the importance of the study and recommendations.

Managerial Implications

Implications of results for practice

Staff engagement has been treated as a panacea for improved quality outcomes in public health systems (Dromey, 2014; West & Dawson, 2012). This research confirms that while engagement is important, it is not always required to provide improved experiences at work and improved patient outcomes. Rather, high-quality relationships both with the organisation and the leader are required, and the research demonstrates that resonant leadership is a relational style which is positively associated with staff experience and patient outcomes. The focus can now shift from measuring staff engagement, to measuring resonant leadership, and fostering and developing resonant leadership in practice.

Implications for nursing leadership

In New Zealand, the national and healthcare cultures have underpinning expectations of a partnership approach between participants. This partnership approach is heavily reliant on strong effective relationships and emerges from Te Tiriti o Waitangi and can be seen in a highly unionised workforce, such as nursing. The theoretical perspective of SET is, therefore, highly relevant, as are the interactions which are interdependent and contingent on another and which lead to obligations and influence the quality of relationships (Cropanzano & Mitchell, 2005). Nursing leaders are responsible for setting strategic direction, resource allocation, and planning (Thorman, 2004). They are also responsible for providing support and encouragement to staff to

enable them to feel positive about their work and understand the true impact of their work on patient experience and outcomes. Much of the existing literature in the nursing field relates to the practice environment and is founded in Magnet principles and tools. This research demonstrates the application of theory (SET) into a real world context to produce modifiable factors.

Nurse leaders should now focus on recruitment strategies such as those suggested by McKee (2016) to select nurse leaders who display high levels of resonant leadership, such as using behavioural event interviewing and undertaking verbal discussions with referees to gain detailed examples of the candidates' relationships and interpersonal interactions. When considering strategies to identify charge nurse managers who may benefit from development in this area, patient outcome indicators should be reviewed and, if they do not exist, indicators should be introduced which are evidenced to reveal insights into the impact of leadership on quality care, particularly falls and the friends and family test. Staff surveys should include known antecedents of work engagement such as resonant leadership, POS, and the LMX scale.

Existing charge nurse managers could be assessed for emotional intelligence and development plans constructed given resonant leadership has its origins from emotional intelligence (Cummings et al., 2005; McKee & Massimilian, 2006). Development plans may include an intentional change framework (Boyatzis & McKee, 2006) to implement coaching to develop emotional intelligent leaders (Boyatzis, Smith, Van Oosten, & Woolford, 2013). This could be complemented by amending existing reflective frameworks to foster self-management and high quality relationships (Heckemann, Schols, & Halfens, 2015).

Strengths and Limitations

The following sections describe the strengths and limitations of this thesis work. Acknowledging the study strengths and limitations provides context for the interpretation of results and validity of the findings.

Strengths

Research design. The design of the research provided a positive frame to explore the relationship between engagement, charge nurse manager leadership, the leadership

relationship, practice environment, and patient outcomes. The cross-sectional nature of the design has resulted in findings which can be interpreted between teams (Klein & Kozlowski, 2000) and provide a platform for future research. The construction of the LEON survey and inclusion of a marker variable, enabled tests for common-method variance to be undertaken, and measurement error as a result of common-method bias, to be discounted.

The inclusion of institutional data was an innovative approach and provided fresh insights into the benefits and challenges of using readily available data. Data analysis was a rigorous process to ensure that the measurement model taken into structural equation modeling and path analysis demonstrated a good fit to the data, and was valid and reliable. This study was the first time structural equation modeling has been used to understand the relationships between the particular variables in this research.

Creating a model of leadership and engagement of nurses to improve patient safety (falls) and satisfaction. This research has resulted in a model of leadership and engagement of nurses to improve patient safety (falls) and satisfaction using SET as a lens. It provides nurse leaders with a model which describes the importance, and complexities, of team level relationships. As a result, it reveals factors which can be modified, such as resonant leadership and workplace relationships: organisation support and LMXs, which have been shown to have positive associations with lower falls rates and higher patient satisfaction.

Benefits of the doctoral journey. This research provided an opportunity for me, as a senior nurse leader in a DHB in New Zealand, to explore an area of practice in an applied way. As a nurse executive the opportunity to work methodically and rigorously through practice based problems is a luxury and something which time and workload do not usually allow. The DHSc has provided a valuable opportunity to do this within a research framework. Not only have the findings extended the evidence base in this research field, but the applied nature of the DHSc provides me with an opportunity to translate the findings into practice because I am in a position to do so.

Having undertaken the DHSc, I now also have a basic grounding in research methods. This has enabled me to consider the state and positioning of nursing research at my DHB. I have adequate knowledge to begin to outline a research strategy for nursing to support

increased capability and research activity to support frontline inquiry, research pathways, and doctoral and post doctoral research. This provides me an opportunity to develop a vision and implement a strategy for nursing research excellence, to support patient care and patient experience in a holistic way.

Embarking on the doctoral journey was challenging with the job demands of a senior position. However my years of experience were very helpful as I navigated several challenging periods–personally, professionally, and academically. My resilience and determination to get through the journey, as well as a very supportive network, were critical for success.

The quantitative approach and reliance on statistical methods was an important part of the learning. As an example, one of the components of the research design was to identify a suitable marker variable. This was challenging from a number of perspectives. It required me to understand common-method bias, something which is obvious to experienced statisticians. I needed to investigate and consider a number of potential scales. Many scales I found appeared to either be considered theoretically linked to SET (e.g. social desirability or positive and negative affect), or may have appeared out of context to participants within the other constructs within the LEON survey (e.g. Willingness to try new food products; DSI scale). I decided to use two potential marker variables in this study. I found that one, bureaucracy scale, demonstrated strong correlations with POS ($r = .325$, $p < .01$) and work engagement ($r = .137$, $p < .05$) indicating that bureaucracy was related to the other constructs being measured. When I commenced the journey, I had no understanding of where it would take me. As a result of undertaking this research and using these methods, I have been able to take these skills and understanding into the workplace, and have peer-reviewed several potential journal articles.

Limitations

Research design. The research was a cross-sectional study with the data collected at one period in time and may, therefore, be susceptible to prevalence-incidence bias (Levin, 2006). The self-report nature of the research was a possible source of common-method bias (Podsakoff et al., 2003). Institutional data were used to mitigate the impact of common-method bias (Podsakoff et al., 2003). The institutional independent variables were drawn from unit-level data whereas the LEON survey gathered individual-level data. The resulting cross-level effect

limits interpretation of the findings to between-team effect, not within-team effect (Klein &

Kozlowski, 2000); although Purdy et al. (2010) used a combination of individual level dependent

variables in their multi-level study. Further multi-level research is required (Klein & Kozlowski,

2000).

My position as a senior professional leader may have influenced the responses;

however, the design created separation from the participants and all communication was

undertaken by the Workforce Development Manager. This source of bias is not a prevalent

consideration in cross-sectional research (McCambridge, De Bruin, & Witton, 2012). In addition,

analysis of missing values and influentials identified patterns of missing-ness which were

deemed not to be random.

Unlike other studies, where perceptions of unit care quality was used, the FOC peer

review process was in place in the study setting. Therefore respondents may have had a better

understanding of the actual quality of care rating on the ward/unit and this may have influenced

their perceptions of unit care quality. The strength of the significance of the findings may,

therefore, be influenced by this knowledge.

Sources of respondents. The research was limited to one DHB in New Zealand, and

therefore the findings may not be translatable to other settings or professional contexts. A

further source of bias could be due to measurement bias, that is, where the responses do not

reflect the target audience (Lavrakas, 2008). The initial response rate was acceptable, and the

final responses (N = 252, 26%) reflected the population, apart from an inverse representation of

full-time and part-time staff. The response did, however, meet the number required for

goodness-of fit measures and analysis using structural equation modeling (Heine, 2016).

Measurement bias is not expected to be a factor in this research. In addition the heterogeneous

sample limits comparability with nurse-specific samples.

Implications for Future Research

This research provides further evidence that resonant leadership is a relevant leadership style

for a highly relational context such as unit level patient care. Care is often provided and led in a

multidisciplinary (and sometimes interdisciplinary) manner. Given the contribution of

interdisciplinary teams to patient outcomes and experience, the varied world views of these

professions, and that often these teams are managed by the same person, further research is required to investigate the relationship between resonant leadership and engagement and patient outcomes in other locations and with interdisciplinary teams.

The lack of existing research using institutional data was both a unique research opportunity and a risk given the exploratory nature of the research. The final structural equation model was not able to retain pressure injuries, FOC and complaints variables, as significant paths did not exist. This provides researchers with clear evidence that falls and the Friends and Family Test should be selected for future studies. FOC is an emerging indicator of unit level quality care in New Zealand and would benefit from further research.

As the research was exploratory, future multi-level research using repeated measures would be beneficial to address the limitations of the cross-sectional (Levin, 2006) and cross-level analysis (Klein & Kozlowski, 2000). This research was not designed to test the association of bureaucracy with the other constructs, and this unexpected finding may benefit from future nursing research given the bureaucratic nature of healthcare and nurses' work.

This research has identified a number of interventions which could be implemented to enhance the resonant leadership capabilities of the workforce. These include recruitment and development of staff emotional intelligence competencies, the introduction of staff surveys using the LEON constructs, and the introduction of falls and the Friends and Family Test nurse-sensitive indicators. Research of the impact of such interventions must be undertaken.

Given the importance of relationships for Māori, both as patients and staff, it is important to ensure the perspectives of Māori are heard to ensure that health equity is achieved. A more relational research approach, could be adopted to explore Māori nurse experiences of the constructs of the LEON survey. A number of mechanisms are available which support the ability to gain new insights from Māori within a culturally safe framework (Wilson, 2017; Wilson & Neville, 2009). This involves adopting formal Māori best practice protocols (Tikanga) using a face-to-face method of engagement and could be used to gain insights and perspectives from Māori patients.

Knowledge Translation

I will present the outcomes of the research to the participating organisation in a number of forums including a hui, and to the participant group including frontline nurses, clerical staff, and line managers employed on adult inpatient medical surgical wards or units at the DHB. During the course of this research, I commenced a new role as Director of Patient Care, Chief Nurse and Allied Health Professions Officer at another metro-DHB in Auckland where dissemination will also be conducted. I will consider and implement strategies to assess, develop, and grow resonant leaders, and review behavioural interview approaches to improve understanding of emotional intelligence. The staff survey will be reviewed to ensure that LEON constructs are included, particularly for nurses.

My new role provides a network of national, regional, and international nurse leaders. I have engaged the New Zealand National Director of Nursing Group, as I am a member, to share experiences with measurement and improvement of quality care. I will disseminate the research to this group. I am also an active member of the International Learning Collaborative (ILC, 2018) and have contributed to two peer reviewed published articles in 2017-2018. The results of this research will be shared at a future ILC conference and summit meeting. Suitable conferences will be identified and abstracts submitted. Publications will be developed to disseminate the results.

Conclusion

While it is important for leaders of health organisations to ensure that staff experience positive work environments, there is a shift of focus to improve outcomes for patients, and particularly their experience. This research has demonstrated that engagement mediates the antecedents of perceived organisation support and LMX. These are reconfirmed as antecedents of engagement and furthers our understanding. Resonant leadership is confirmed as the starting point of improved patient outcomes and an antecedent of POS, LMX and engagement. The research has also confirmed the importance of social exchange relationships to achieve improved patient outcomes such as reduced falls rates and improved patient satisfaction. It is now possible to consider engagement as a form of reciprocity and exchange resource. Further

emphasis is required in health settings to reframe staff surveys to include social exchange components of staff experience such as perceived organisation support and quality of leader-member relationships.

Resonant leadership has a positive impact on patient satisfaction mediated through POS, work engagement, perception of quality and reduced falls rates; and a direct relationship on patient satisfaction. Given the positive impact resonant leadership has on staff outcomes, and its mitigating effect on negative staff outcomes (Hutchinson & Hurley, 2013), it is possible now to shift the frame of research and practice to a more positive perspective. The SET lens provided a relational context to the investigation, which is theoretically plausible when considering the relational nature of resonant leadership and patient experience, and it is particularly important in New Zealand and in healthcare.

Recommendations

In this research I have identified a number of areas for further research and practice. In this section I summarise the four recommendations for practice and the four recommendations for research.

Recommendations for practice

1. Review recruitment strategies and incorporate behavioural interviewing techniques which probes for and elicits insights into emotional intelligence.

2. Review staff surveys and ensure that 'perceptions of unit care quality' and known antecedents of work engagement are included such as resonant leadership scale, POS, and the LMX scales.

3. Review existing nurse-sensitive indicators for falls and Friends and Family Test, and map these by ward/unit to identify leaders who may benefit from leadership coaching and specific development plans.

4. Review tools which may support the development of resonant leaders such as an intentional change framework (Boyatzis & McKee, 2006) and reflective frameworks to foster emotional intelligence (Heckemann et al., 2015).

Recommendations for research

1. Repeat the approach enhancing it to utilise multi-level and repeated measures approaches to investigate the relationship between resonant leadership and engagement and patient outcomes in other DHB settings, countries, and with interdisciplinary teams.

2. Undertake further research into the relationship between resonant leadership and FOC as a composite indicator of quality.

3. Investigate the impact of interventions which are implemented to enhance resonant leadership capabilities of the workforce.

4. Explore the experiences of Māori nurses and patients using culturally safe research practices (Wilson & Neville, 2009).

<div style="text-align: center;">References</div>

Abdelhadi, N., & Drach-Zahavy, A. (2012). Promoting patient care: Work engagement as a mediator between ward service climate and patient-centred care. *Journal of Advanced Nursing, 68*(6), 1276-1287. doi:10.1111/j.1365-2648.2011.05834.x

Abidin, R. R., Zalaquett, C. P., & Wood, R. J. (Eds.). (1997). *Evaluating stress: A book of resources*. Lanham, MD: Scarecrow Education.

Aiken, L. H., Clarke, S. P., & Sloane, D. M. (2002). Hospital staffing, organization, and quality of care: Cross-national findings. *International Journal for Quality in Health Care, 14*(1), 5-13. doi:10.1093/intqhc/14.1.5

Aiken, L. H., Clarke, S. P., Sloane, D. M., Lake, E. T., & Cheney, T. (2008). Effects of hospital care environment on patient mortality and nurse outcomes. *Journal of Nursing Administration, 38*(5), 223-229.

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J. A., Busse, R., Clarke, H., . . . Shamian, J. (2001). Nurses' reports on hospital care in five countries: The ways in which nurses' work is structured have left nurses among the least satisfied workers, and the problem is getting worse. *Health Affairs, 20*(3), 43-53.

Aiken, L. H., & Patrician, P. A. (2000). Measuring organizational traits of hospitals: The Revised Nursing Work Index. *Nurse Researcher, 49*(3), 146-153.

Aiken, L. H., Sloane, D. M., Bruyneel, L., Van den Heede, K., Griffiths, P., Busse, R., . . . Sermeus, W. (2014). Nurse staffing and education and hospital mortality in nine European countries: A retrospective observational study. *The Lancet, 383*(9931), 1824-1830. doi:10.1016/s0140-6736(13)62631-8

Aiken, L. H., Smith, H. L., & Lake, E. T. (1994). Lower Medicare mortality among a set of hospitals known for good nursing care. *Medical Care, 32*(8), 771-787.

American Nurses Association. (2013). Survey: Nurses believe quality programs ineffective: Disconnect between leadership, staff. *Patient Safety Monitor Journal, 14*(6), 1.

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

Andrew, S., & Halcomb, E. (Eds.). (2009). *Mixed methods research for nursing and the health sciences*. Oxford, UK: Wiley Online Library.

Armstrong, K. J., & Laschinger, H. K. S. (2006). Structural empowerment, magnet hospital characteristics, and patient safety culture: making the link. *Journal of Nursing Care Quality, 21*(2), 124-134.

Ausserhofer, D., Zander, B., Busse, R., Schubert, M., De Geest, S., Rafferty, A.-M., . . . Rn Cast consortium. (2014). Prevalence, patterns and predictors of nursing care left undone in European hospitals: Results from the multicountry cross-sectional RN4CAST study. *BMJ Quality Safety, 23*(2), 126-135. doi:10.1136/bmjqs-2013-002318

Babbie, E. R. (2011). *The basics of social research* (5th ed.). Belmont, CA: Wadsworth, Cengage Learning.

Babcock-Roberson, M. E., & Strickland, O. J. (2010). The relationship between charismatic leadership, work engagement, and organizational citizenship behaviors. *The Journal of Psychology, 144*(3), 313-326. doi:10.1080/00223981003648336

Bailey, C., Madden, A., Alfes, K., & Fletcher, L. (2017). The meaning, antecedents and outcomes of employee engagement: A narrative synthesis. *International Journal of Management Reviews, 19*(1), 31-53.

Bamford, M., Wong, C. A., & Laschinger, H. K. S. (2013). The influence of authentic leadership and areas of worklife on work engagement of registered nurses. *Journal of Nursing Management, 21*(3), 529-540.

Bamford-Wade, A., & Moss, C. (2010). Transformational leadership and shared governance: An action study. *Journal of Nursing Management, 18*(7), 815-821. doi:10.1111/j.1365-2834.2010.01134.x

Barcellos, M. D. d., Aguiar, L. K., Ferreira, G. C., & Vieira, L. M. (2009). Willingness to try innovative food products: A comparison between British and Brazilian consumers. *BAR-Brazilian Administration Review, 6*(1), 50-61.

Bargagliotti, L. A. (2011). Work engagement in nursing: A concept analysis. *Journal of Advanced Nursing, 68*(6), 1414-1428.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology, 88*(2), 207-218. doi:10.1037/0021-9010.88.2.207

Bawafaa, E., Wong, C. A., & Laschinger, H. K. S. (2015). The influence of resonant leadership on the structural empowerment and job satisfaction of registered nurses. *Journal of Research in Nursing, 20*(7), 610-622. doi:10.1177/1744987115603441

Bentler, P. M., & Chou, C.-P. (1987). Practical issues in structural modeling. *Sociological Methods & Research, 16*(1), 78-117.

Berkow, S., Workman, J., Aronson, S., Stewart, J., Virkstis, K., & Kahn, M. (2012). Strengthening frontline nurse investment in organizational goals. *Journal of Nursing Administration, 42*(3), 165-169. doi:10.1097/NNA.0b013e31824809b7

Berwick, D. (2013). *A promise to learn—a commitment to act. Improving the safety of patients in England. National Advisory Group on the Safety of Patients in England*. London, UK: Stationery Office.

Black, J. (2007). NPUAP Updates stages of pressure ulcers. *Inside the NPUAP, 21*(Spring), 5.

Blaikie, N. (2009). *Designing social research*. Cambridge, UK: Polity Press.

Blau, P. M. (1964). *Exchange and power in social life*. New York, NY: John Wiley.

Bondas, T. E. (2003). Caritative leadership: Ministering to the patients. *Nursing Administration Quarterly, 27*(3), 249-253.

Boyatzis, R. E., & McKee, A. (2006). Intentional change. *Journal of Organizational Excellence, 25*(3), 49-60.

Boyatzis, R. E., Smith, M. L., Van Oosten, E., & Woolford, L. (2013). Developing resonant leaders through emotional intelligence, vision and coaching. *Organizational Dynamics, 42*(1), 17-24.

Boyle, S. M. (2004). Nursing unit characteristics and patient outcomes. *Nursing Economic$, 22*(3), 111.

Bradshaw, A. (2010). Is the ward sister role still relevant to the quality of patient care? A critical examination of the ward sister role past and present. *Journal of Clinical Nursing, 19*(23/24), 3555-3563. doi:10.1111/j.1365-2702.2010.03374.x

Brunetto, Y., Farr-Wharton, R., & Shacklock, K. (2011). Supervisor–subordinate communication relationships, role ambiguity, autonomy and affective commitment for nurses. *Contemporary Nurse, 39*(2), 227-239.

Brunetto, Y., Shacklock, K., Teo, S., & Farr-Wharton, R. (2014). The impact of management on the engagement and well-being of high emotional labour employees. *The International Journal of Human Resource Management, 25*(17), 2345-2363. doi:10.1080/09585192.2013.877056

Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (3rd ed.). New York, NY: Routledge.

Came, H., Doole, C., McKenna, B., & McCreanor, T. (2018). Institutional racism in public health contracting: Findings of a nationwide survey from New Zealand. *Social Science & Medicine, 199*, 132-139. doi:10.1016/j.socscimed.2017.06.002

Capuano, T., Bokovoy, J., Hitchings, K., & Houser, J. (2005). Use of a validated model to evaluate the impact of the work environment on outcomes at a Magnet Hospital. *Health Care Manager Review, 30*(3), 229-236.

Carryer, J. B., Diers, D., McCloskey, B., & Wilson, D. (2010). Effects of health policy reforms on nursing resources and patient outcomes in New Zealand. *Policy Politics and Nursing Practice, 11*(4), 275-285. doi:10.1177/1527154410393360

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research, 295*(2), 295-336.

Choi, J., Bakken, S., Larson, E., Du, Y., & Stone, P. W. (2004). Perceived nursing work environment of critical care nurses. *Nursing Research, 53*(6), 370-378.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* (2nd ed.). Hillsdale, NJ: Erlbaum Associates.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155.

Coulter, A., Fitzpatrick, R., & Cornwall, J. (2009). *The point of care: Measures of patients' experience of hospital: Purpose, methods and uses.* London, UK: The Kings Fund.

Cropanzano, R., & Mitchell, M. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management, 31*(6), 874-900.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. NSW, Australia: Sage.

Cummings, G. (2004). Investing relational energy: The hallmark of resonant leadership. *Nursing Leadership (Toronto, Ont.), 17*(4), 76-87.

Cummings, G., Hayduk, L., & Estabrooks, C. (2005). Mitigating the impact of hospital restructuring on nurses: the responsibility of emotionally intelligent leadership. *Nursing Research, 54*(1), 2-12.

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

Cummings, G., MacGregor, T., Davey, M., Lee, H., Wong, C. A., Lo, E., . . . Stafford, E. (2010a). Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. *International Journal of Nursing Studies, 47*(3), 363-385. doi:10.1016/j.ijnurstu.2009.08.006

Cummings, G., Midodzi, W., Wong, C. A., & Estabrooks, C. (2010). The contribution of hospital nursing leadership styles to 30-day patient mortality. *Nursing Research, 59*(5), 331-339. doi:10.1097/NNR.0b013e3181ed74d5

Dasgupta, P. (2016). Work engagement of nurses in private hospitals: A study of Its antecedents and mediators. *Journal of Health Management, 18*(4), 555.

Davis, P., Lay-Yee, R., Dyall, L., Briant, R., Sporle, A., Brunt, D., & Scott, A. (2006). Quality of hospital care for Maori patients in New Zealand: Retrospective cross-sectional assessment. *Lancet, 367*(9526), 1920-1925.

Dawson, J. (2014). *Staff experience and patient outcomes: What do we know?* NHS Employers. Retrieved from http://www.nhsemployers.org/~/media/Employers/Publications/Research report Staff experience and patient outcomes.pdf

Department of Health. (1999a). *Making a difference: Strengthening the nursing, midwifery and health visiting contribution to health and healthcare*. London, UK: Stationary Office

Department of Health. (1999b). *Making a difference: Strengthening the nursing, midwifery and health visiting contribution to health and healthcare*. London: Stationery Office.

Department of Health. (2012). *Delivering the NHS safety thermometer CQUIN 2012/13: A preliminary guide to measuring 'Harm Free' care*. Salford, UK. Retrieved from https://http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216534/dh_134329.pdf

Department of Health. (2013). *The NHS friends and family test publication guidance*. Leeds: Crown

Department of Health. (2014). *Hard truths: The journey to putting patients first. Response to the Inquiry's recommendations* (Vol. 2). London, UK: Stationery Office.

DiCiccio, T. J., & Efron, B. (1996). Bootstrap confidence intervals: Rejoinder. *Statistical Science, 11*(3), 223-228.

Dillman, D., A. (2000). *Mail and internet surveys; the tailored design method* (2nd ed.). Chichester, NY: John Wiley & Sons Inc.

Doherty, C. (2003). Modernisation: The role of ward sisters and charge nurses. *Nursing Standard, 17*(52), 33-35.

Donabedian, A. (1969). Part II - Some issues in evaluating the quality of nursing care. *American Journal of Public Health, 59*(10), 1833-1836.

Donaldson, N., Bolton, L. B., Aydin, C., Brown, D., Elashoff, J. D., & Sandhu, M. (2005). Impact of California's licensed nurse-patient ratios on unit-level nurse staffing and patient outcomes. *Policy, Politics, & Nursing Practice, 6*(3), 198-210.

Donaldson, N., Storer Brown, D., & Aydin, C. E. (2005). Leveraging nurse-related dashboard benchmarks to expedite performance improvement and document excellence. *Journal of Nursing Administration, 35*(4), 163-172.

Dromey, J. (2014). *Meeting the challenge: Successful employee engagement in the NHS*. London, UK: IPA.

Dubois, C.-A., D'Amour, D., Pomey, M.-P., Girard, F., & Brault, I. (2013). Conceptualizing performance of nursing care as a prerequisite for better measurement: A systematic and interpretive review. *BMC Nursing, 12*, 7-7. doi:10.1186/1472-6955-12-7

Dubois, C.-A., D'amour, D., Tchouaket, E., Clarke, S., Rivard, M., & Blais, R. (2013). Associations of patient safety outcomes with models of nursing care organization at unit level in hospitals. *International Journal for Quality in Health Care, 25*(2), 110-117.

Duffield, C., Diers, D., O'Brien-Pallas, L., Aisbett, C., Roche, M., King, M., & Aisbett, K. (2011). Nursing staffing, nursing workload, the work environment and patient outcomes. *Applied Nursing Research, 24*(4), 244-255. doi:10.1016/j.apnr.2009.12.004

Duffield, C., & Franks, H. (2001). The role and preparation of firstline nurse managers in Australia: Where are we going and how do we get there? *Journal of Nursing Management, 9*(2), 87-91.

Durie, M. H. (1985). A Māori perspective of health. *Social Science & Medicine, 20*(5), 483-486.

Efron, B. (1992). Bootstrap methods: Another look at the jackknife. In S. Kotz & N. L. Johnson (Eds.), *Breakthroughs in statistics* (Vol. 2, pp. 569-593). New York, NY: Springer.

Eisenberger, R., Cummings, J., Armeli, S., & Lynch, P. (1997). Perceived organizational support, discretionary treatment, and job satisfaction. *Journal of Applied Psychology, 82*, 812–820.

Erdogan, B., & Bauer, T. N. (2015). Leader–member exchange theory. In J. D. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (2nd ed., pp. 641-647). Oxford, UK: Elsevier. Retrieved from http://www.sciencedirect.com/science/article/pii/B9780080970868220102. doi:http://dx.doi.org/10.1016/B978-0-08-097086-8.22010-2

Estabrooks, C., Squires, J., Cummings, G., Birdsell, J. M., & Norton, P. (2009). Development and assessment of the Alberta Context Tool. *BMC Health Services Research, 9*(234), 12.

Feo, R., Conroy, T., Jangland, E., Muntlin Athlin, A., Brovall, M., Parr, J. M., . . . Kitson, A. (2017). Towards a standardised definition for fundamental care: A modified Delphi study. *Journal of Clinical Nursing, 27*(11-12), 2285-2299.

Feo, R., & Kitson, A. (2016). Promoting patient-centred fundamental care in acute healthcare systems. *International Journal of Nursing Studies, 57*, 1-11. doi:10.1016/j.ijnurstu.2016.01.006

First Do No Harm. (2014). *Falls and pressure injuries*. Retrieved from http://www.firstdonoharm.org.nz/index.php?option=com_content&view=article&id=68&Itemid=257

Firth, K. (2002). Ward leadership: Balancing the clinical and managerial roles. *Professional Nurse (London, England), 17*(8), 486-489.

Francis Inquiry. (2013). *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry–Executive summary*. London, UK: Stationery Office

Gaskin, J., & Lim, J. (2016a). *Master validity tool.* Retrieved December 3, 2017, from http://statwiki.kolobkreations.com/index.php?title=Main_Page

Gaskin, J., & Lim, J. (2016b). *Model fit measures.* Retrieved January 9, 2017, from http://statwiki.kolobkreations.com

Gaskin, J., & Lim, J. (2017). *CFA tool*. Retrieved from http://statwiki.kolobkreations.com/index.php?title=Main_Page

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

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism, 10*(2), 486-489.

Gleeson, H., Calderon, A., Swami, V., Deighton, J., Wolpert, M., & Edbrooke-Childs, J. (2016). Systematic review of approaches to using patient experience data for quality improvement in healthcare settings. *BMJ Open, 6*(8), e011907.

Gold, M. S., & Bentler, P. M. (2000). Treatments of missing data: A Monte Carlo comparison of RBHDI, iterative stochastic regression imputation, and expectation-maximization. *Structural Equation Modeling, 7*(3), 319-355.

Goldsmith, R. E., & Hofacker, C. F. (1991). Measuring consumer innovativeness. *Journal of the Academy of Marketing Science, 19*(3), 209-221.

Goleman, D., Boyatzis, R. E., & McKee, A. (2002). *The new leaders: Transforming the art of leadership into the science of results*. London, UK: Little, Brown

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-

level multi-domain perspective. *The Leadership Quarterly, 6*(2), 219-247. doi:http://dx.doi.org/10.1016/1048-9843(95)90036-5

Gray, L. R. (2012). Nurse manager engagement: A concept analysis. *Nursing Forum, 47*(3), 193-199. doi:10.1111/j.1744-6198.2012.00269.x

Griffiths, P., Jones, S., Maben, J., & Murrells, T. (2008). *State of the art metrics for nursing: A rapid appraisal*. London, UK: Kings College London.

Gronn, P. (2002). Distributed leadership as a unit of analysis. *The Leadership Quarterly, 13*, 423-451.

Hage, J., & Aiken, M. (1967). Relationship of centralization to other structural properties. *Administrative Science Quarterly, 12*(1), 72-92.

Harachi, T., W, Choi, Y., Abbott, R., D, Catalano, R., F, & Bliesner, S., L. (2006). Examining equivalence of concepts and measures in diverse samples. *Prevention Science, 7*(4), 359-368. doi:10.1007/s11121-006-0039-0

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *The Journal of Applied Psychology, 87*(2), 268-279.

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

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* [Electronic document]. New York, NY: Guilford Press. Retrieved from http://ezproxy.aut.ac.nz/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=cat05020a&AN=aut.b12996713&site=eds-live

Hayes, A. F., Montoya, A. K., & Rockwood, N. J. (2017). The analysis of mechanisms and their contingencies: PROCESS versus structural equation modeling. *Australasian Marketing Journal (AMJ), 25*(1), 76-81.

He, J., Staggs, V. S., Bergquist-Beringer, S., & Dunton, N. (2016). Nurse staffing and patient outcomes: A longitudinal study on trend and seasonality. *BMC Nursing, 15*(1), 60.

Health and Disability Commissioner. (2009). *North Shore Hospital; March to October 2007; A report by the Health and Disability Commissioner*. Auckland, New Zealand: Health and Disability Commissioner.

Health Quality and Safety Commission. (2013). *Workshop with Robert Francis, QC*. Retrieved June 1, 2018, from https://http://www.hqsc.govt.nz/news-and-events/event/1049/

Health Quality and Safety Commission. (2014a). *Patient experience indicators*. Retrieved from http://www.hqsc.govt.nz/our-programmes/health-quality-evaluation/projects/health-quality-and-safety-indicators/patient-experience-indicators/

Health Quality and Safety Commission. (2014b). *Statement of Intent 2014 - 2018*. Wellington, New Zealand: Health Quality and Safety Commission.

Health Quality and Safety Commission. (2015). *A window on the quality of New Zealand's health care*. Wellington, New Zealand: Health Quality and Safety Commission. Retrieved from https://http://www.hqsc.govt.nz/assets/Health-Quality-Evaluation/PR/window-on-quality-of-NZ-health-care-Nov-2015.pdf

Health Quality and Safety Commission. (2017). *Quality safety markers 2013-2017*. Retrieved June 1, 2018, from https://http://www.hqsc.govt.nz/our-programmes/health-quality-evaluation/projects/quality-and-safety-markers/

Healthcare Commission. (2006). *Investigation into outbreaks of Clostridium difficile at Stoke Mandeville Hospital, Buckinghamshire Hospitals NHS Trust*. London, UK: Commission for Healthcare Audit and Inspection.

Healthcare Commission. (2007). *Investigation into outbreaks of Clostridium difficile at Maidstone and Tunbridge Wells NHS Trust*. London, UK: Commission for Healthcare Audit and Inspection.

Healthcare Commission. (2009). *Investigation into Mid Staffordshire NHS Foundation Trust*. London, UK: Commission for Healthcare Audit and Inspection.

Heckemann, B., Schols, J. M. G. A., & Halfens, R. J. G. (2015). A reflective framework to foster emotionally intelligent leadership in nursing. *Journal of Nursing Management, 23*(6), 744-753. doi:10.1111/jonm.12204

Heine, H. (2016). *G*Power 3.1 manual*. Retrieved from http://www.gpower.hhu.de/fileadmin/redaktion/Fakultaeten/Mathematisch-Naturwissenschaftliche_Fakultaet/Psychologie/AAP/gpower/GPowerManual.pdf

Henderson, A. S., & Auditore, A. (2013). Process to engage and motivate staff. *Nursing Management, 20*(8), 18-24.

Hewko, S. J., Brown, P., Fraser, K. D., Wong, C. A., & Cummings, G. (2015). Factors influencing nurse managers' intent to stay or leave: A quantitative analysis. *Journal of Nursing Management, 23*(8), 1058-1066. doi:10.1111/jonm.12252

Hinkin, T. R., Tracey, J. B., & Enz, C. A. (1997). Scale construction: Developing reliable and valid measurement instruments. *Journal of Hospitality & Tourism Research, 21*(1), 100-120.

Hinton, P. R. (2004). *Statistics explained* (2nd ed.). New York, NY: Routledge.

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Articles*, 2.

Houser, J. (2003). A model for evaluating the context of nursing care delivery. *Journal of Nursing Administration, 33*(1), 39-47.

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

Hurst, K. (2005). Relationships between patient dependency, nursing workload and quality. *International Journal of Nursing Studies, 42*(1), 75-84. doi:10.1016/j.ijnurstu.2004.05.011

Hurst, K. (2011). Has nursing quality improved in the past quarter of a century? *Nursing Standard, 25*(28), 14-15.

Hutchinson, M., & Hurley, J. (2013). Exploring leadership capability and emotional intelligence as moderators of workplace bullying. *Journal of Nursing Management, 21*(3), 553-562. doi:10.1111/j.1365-2834.2012.01372.x

Jeffs, L., Saragosa, M., Merkley, J., & Maione, M. (2016). Engaging patients to meet their fundamental needs: Key to safe and quality care. *Nursing Leadership (Toronto, Ont.), 29*(1), 59.

Jenaro, C., Flores, N., Begona Orgaz, M., & Cruz, M. (2010). Vigour and dedication in nursing professionals: Towards a better understanding of work engagement. *Journal of Advanced Nursing, 67*(4), 865-875.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*, 692-724.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31-36. doi:10.1007/bf02291575

Kennedy, R. (2008). 'How do we get the managers we need and the leaders we want?' A personal view. *Journal of Nursing Management, 16*(8), 942-945. doi:10.1111/j.1365-2834.2008.00950.x

Kim, H., Capezuti, E., Boltz, M., & Fairchild, S. (2009). The nursing practice environment and nurse-perceived quality of geriatric care in hospitals. *Western Journal of Nursing Research, 31*(4), 480-495. doi:10.1177/0193945909331429

Kings Fund. (2012). *Leadership and engagement for improvement in the NHS Together we can*. London, UK: The Kings Fund.

Kitson, A. (2016). Why do we need to study the fundamentals of care? *Nursing Leadership (Toronto Ont.), 29*(1), 10-16.

Kitson, A., Conroy, T., Kuluski, K., Locock, L., & Lyons, R. (2013). *Reclaiming and redefining the fundamentals of care: Nursing's response to meeting patients' basic human needs* (0987212621). SA, Australia: University of Adelaide.

Kitson, A., Conroy, T., Wengstrom, Y., Profetto-McGrath, J., & Robertson-Malt, S. (2010). Defining the fundamentals of care. *International Journal of Nursing Practice, 16*(4), 423-434. doi:10.1111/j.1440-172X.2010.01861.x

Kitson, A., & Muntlin Athlin, A. (2013). Development and preliminary testing of a framework to evaluate patients' experiences of the fundamentals of care: A secondary analysis of three stroke survivor narratives. *Nursing Research Practice, 2013*, 572437. doi:10.1155/2013/572437

Kitson, A., Muntlin Athlin, A., & Conroy, T. (2014). Anything but basic: Nursing's challenge in meeting patients' fundamental care needs. *Journal of Nursing Scholarship: An Official Publication Of Sigma Theta Tau International Honor Society Of Nursing / Sigma Theta Tau, 46*(5), 331-339. doi:10.1111/jnu.12081

Klein, K. J., & Kozlowski, S. W. J. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational Research Methods, 3*(3), 211.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). [Electronic document]. New York, NY: The Guilford Press. Retrieved from http://ezproxy.aut.ac.nz/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=cat05020a&AN=aut.b14790270&site=eds-live

Koivula, M., & Paunonen-Ilmonen, M. (2001). Ward sisters' objectives in developing nursing and problems with development. *Journal of Nursing Management, 9*(5), 287-294.

Kramer, M., & Hafner, L. P. (1989). Shared values: Impact on staff nurse job satisfaction and perceived productivity. *Nurse Researcher, 38*(3), 172-177.

Kutney-Lee, A., Lake, E. T., & Aiken, L. H. (2009). Development of the hospital nurse surveillance capacity profile. *Research in Nursing and Health, 32*(2), 217-228. doi:10.1002/nur.20316

Lageson, C. (2004). Quality focus of the first line nurse manager and relationship to unit outcomes. *Journal of Nursing Care Quality, 19*(4), 336-342.

Lake, E. T. (2002). Development of the practice environment scale of the Nursing Work Index. *Research in Nursing and Health, 25*(3), 176-188.

Laschinger, H. K. S., Finegan, J., & Wilk, P. (2009). Context matters: The impact of unit leadership and empowerment on nurses' organizational commitment. *Journal of Nursing Administration, 39*(5), 228-235. doi:10.1097/NNA.0b013e3181a23d2b

LaVela, S. L., & Gallan, A. (2014). Evaluation and measurement of patient experience. *Patient Experience Journal, 1*(1), 28-36.

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods*. Thousand Oaks, CA: Sage Publications.

Lee, R. T., Seo, B., Hladkyj, S., Lovell, B. L., & Schwartzmann, L. (2013). Correlates of physician burnout across regions and specialties: A meta-analysis. *Human Resources for Health, 11*(1), 48.

Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-Based Dentistry, 7*(1), 24.

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross sectional research designs. *Journal of Applied Psychology, 86*(1), 114-121.

Lloyd-Bostock, S., & Mulcahy, L. (1994). The social psychology of making and responding to hospital complaints: An account model of complaint processes. *Law and Policy, 16*, 123–147.

Lomax, R. G., & Schumacker, R. E. (2004). *A beginner's guide to structural equation modeling.* Hove, England: Psychology Press.

Maben, J., Peccei, R., Adams, M., Robert, G., Richardson, A., Murrells, T., & Morrow, E. (2012). *Exploring the relationship between patients' experiences of care and the influence of staff motivation, affect and wellbeing. Final report.* Southampton, UK: NIHR Service Delivery and Organization Programme.

Machell, S., Gough, P., Naylor, N., Nath, V., Steward, K., & Williams, S. (2010). *Putting quality first in the boardroom: Improving the business of caring*. London, UK: The Kings Fund.

Maslach, C., & Leiter, M. P. (1997). *The truth about burnout*. San Francisco, CA: Jossey-Bass Publishers.

Mastal, M. F., Joshi, M., & Schulke, K. (2007). Nursing leadership: Championing quality and patient safety in the boardroom. *Nursing Economic$, 25*(6), 323-330.

May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology, 77*(1), 11-37.

McBain, R. (2007). The practice of engagement. Research into current employee engagement practice. *Strategic HR Review, 6*(6), 16-19.

McCallin, A. M., & Frankson, C. (2010). The role of the charge nurse manager: A descriptive exploratory study. *Journal of Nursing Management, 18*(3), 319-325. doi:10.1111/j.1365-2834.2010.01067.x

McCambridge, J., De Bruin, M., & Witton, J. (2012). The effects of demand characteristics on research participant behaviours in non-laboratory settings: A systematic review. *PloS One, 7*(6), e39116.

McCance, T., Telford, L., Wilson, J., MacLeod, O., & Dowd, A. (2012). Identifying key performance indicators for nursing and midwifery care using a consensus approach. *Journal of Clinical Nursing, 21*(7/8), 1145-1154. doi:10.1111/j.1365-2702.2011.03820.x

McCloskey, B. A., & Diers, D. K. (2005). Effects of New Zealand's health reengineering on nursing and patient outcomes. *Medical Care, 43*(11), 1140-1146.

McCusker, J., Dendukuri, N., Cardinal, L., Laplante, J., & Bambonye, L. (2004). Nursing work environment and quality of care: Differences between units at the same hospital. *International Journal of Health Care Quality Assurance, 17*(6), 313-322.

McKee, A. (2016). How to hire for emotional intelligence. *Harvard Business Review Digital Articles*, 2-4.

McKee, A., & Massimilian, D. (2006). Resonant leadership: A new kind of leadership for the digital age. *Journal of Business Strategy, 27*(5), 45-49. doi:10.1108/02756660610692707

McMurray, A. J., & Williams, L. (2004). Factors impacting on nurse managers' ability to be innovative in a decentralized management structure. *Journal of Nursing Management, 12*, 348-353.

Mehra, A., Smith, B. R., Dixon, A. L., & Robertson, B. (2006). Distributed leadership in teams: The network of leadership perceptions and team performance. *The Leadership Quarterly, 17*(3), 232-245. doi:10.1016/j.leaqua.2006.02.003

Mills, C., Pritchard, T., & Boden, L. (2005). Developing the ability to lead: Carolyn Mills and colleagues describe a project at their NHS trust to develop the management and leadership capacity of ward sisters and charge nurses. *Nursing Management, 12*(4), 20-23.

Minister of Health. (2003). *Improving Quality (IQ): A systems approach for the New Zealand health and disability sector*. Wellington, New Zealand: Ministry of Health.

Ministry of Health. (2015). *Health of the health workforce 2015*. Wellington, New Zealand: Ministry of Health. Retrieved from https://http://www.health.govt.nz/system/files/documents/publications/health-of-health-workforce-2015-feb16_0.pdf

Mueller, B., H., & Lee, J. (2002). Leader-member exchange and organizational communication satisfaction in multiple contexts. *Journal of Business Communication, 39*(2), 220-244. doi:10.1177/002194360203900204

Needleman, J. (2016). The economic case for fundamental nursing care. *Nursing Leadership (Toronto, Ont.), 29*(1), 26.

Needleman, J., Buerhaus, P., Mattke, S., Stewart, M., & Zelevinsky, K. (2002). Nurse staffing levels and the quality of care in hospitals. *New England Journal of Medicine, 346*(22), 1715-1722.

Needleman, J., Buerhaus, P. I., Mattke, S., Stewart, M., & Zelevinsky, K. (2001). *Nurse staffing and patient outcomes in hospitals*. Boston, MA: Harvard School of Public Health.

Needleman, J., Kurtzman, E. T., & Kizer, K. W. (2007). Performance measurement of nursing care: State of the science and the current consensus. *Medical Care Research and Review, 64*(2 Suppl), 10S-43S. doi:10.1177/1077558707299260

NHS Commissioning Board. (2013). *Commissioning for quality and innovation (CQUIN): 2013/14 guidance*. London, UK: Stationery Office.

NHS England. (2014). *Review of the Friends and Family Test*. London, UK: NHS England.

Paquet, M., Courcy, F., Lavoie-Tremblay, M., Gagnon, S., & Maillet, S. (2013). Psychosocial work environment and prediction of quality of care indicators in one Canadian health center. *Worldviews on Evidence-Based Nursing, 10*(2), 82-94. doi:10.1111/j.1741-6787.2012.00250.x

Parr, J. M., Bell, J., & Koziol-McLain, J. (2018). Evaluating fundamentals of care: The development of a unit-level quality measurement and improvement programme. *Journal of Clinical Nursing* (Fundamental Care), 1-13. doi:10.1111/jocn.14250

Patrician, P. A., Loan, L., McCarthy, M., Brosch, L. R., & Davey, K. S. (2010). Towards Evidence-based management: Creating an informative database of nursing-sensitive indicators. *Journal of Nursing Scholarship, 42*(4), 358-366.

Patrician, P. A., Shang, J., & Lake, E. T. (2010). Organizational determinants of work outcomes and quality care ratings among Army Medical Department registered nurses. *Research in Nursing & Health, 33*(2), 99-110. doi:10.1002/nur.20370

Pegram, A. M., Grainger, M., Sigsworth, J., & While, A. E. (2014). Strengthening the role of the ward manager: A review of the literature. *Journal of Nursing Management, 22*(6), 685-696.

Pinder, R. J., Greaves, F. E., Aylin, P. P., Jarman, B., & Bottle, A. (2013). Staff perceptions of quality of care: An observational study of the NHS Staff Survey in hospitals in England. *BMJ Quality & Safety, 22*, 563-570.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.

Poynter, M., Hamblin, R., Shuker, C., & Cincotta, J. (2017). *Quality improvement: No quality without equity?* Wellington, New Zealand: Health Quality and Safety Commission. Retrieved from https://http://www.hqsc.govt.nz/

Purdue University. (2015). *Structural equation modeling.* Retrieved May 16, 2015, from http://www.stat.purdue.edu/~bacraig/SCS/Structural Equation Modeling.doc.

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

Rafferty, A. E., & Griffin, M. A. (2004). Dimensions of transformational leadership: conceptual and empirical extensions. *The Leadership Quarterly, 15*, 329-354.

Reader, T. W., Gillespie, A., & Roberts, J. (2014). Patient complaints in healthcare systems: A systematic review and coding taxonomy. *BMJ Quality & Safety, 23*(8), 678-689.

Redfern, S. J., & Norman, I. J. (1990). Measuring the quality of nursing care: A consideration of different approaches. *Journal of Advanced Nursing, 15*, 1260-1271.

Research Gate. (2015). *Structural equation modeling using AMOS: An introduction*. Retrieved May 17, 2015, from http://www.researchgate.net/publictopics.PublicPostFileLoader.html?id=551bcf4cd2fd6424088b45e4&key=a36a33c0-acf9-4e5e-9d0a-cd4a294cc4f0.

Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology, 87*, 698-714.

Robert, G., Cornwell, J., & Black, N. (2018). Friends and family test should no longer be mandatory. *British Medical Journal, 360*(k367), 1-2.

Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology, 21*(7), 600-619. doi:10.1108/02683940610690169

Schaufeli, W., & Bakker, A. (2003). *UWES Utrecht Work Engagement Scale: Preliminary nanual.* Utrecht, Netherlands: Occupational Health Psychology Unit, Utrecht University.

Schaufeli, W., & Bakker, A. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior, 25*(3), 293-315. doi:10.1002/job.248

Schaufeli, W., Bakker, A., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational & Psychological Measurement, 66*(4), 701-716.

Sexton, J., & Thomas, E. (2003). *The safety climate survey: Psychometric and benchmarking properties.* Austin, TX: The University of Texas Center of Excellence for Patient Safety Research and Practice. Rockville, MD: Agency for Healthcare Research and Quality.

Shacklock, K., Brunetto, Y., Teo, S. T. T., & Farr-Wharton, R. (2013). The role of support antecedents in nurses' intentions to quit: the case of Australia. *Journal of Advanced Nursing, 70*(4), 811-822. doi:10.1111/jan.12239

Simpson, M. R. (2009). Engagement at work: A review of the literature. *International Journal of Nursing Studies, 46*(7), 1012-1024. doi:10.1016/j.ijnurstu.2008.05.003

Simpson, M. R. (2010). Development and psychometric evaluation of the core nurse resource scale M. R. Simpson Core nurse resource scale. *Journal of Nursing Management, 18*(8), 1048-1059. doi:10.1111/j.1365-2834.2010.01137.x

Slater, T., Matheson, A., Davies, C., Goodyer, C., Holdaway, M., & Ellison-Loschmann, L. (2016). The role and potential of community-based cancer care for Māori in Aotearoa/New Zealand. *The New Zealand Medical Journal, 129*(1430), 29-38.

Spence Laschinger, H. K. S. (2008). Effect of empowerment on professional practice environments, work satisfaction, and patient care quality: Further testing the Nursing Worklife Model. *Journal of Nursing Care Quality, 23*(4), 322-330. doi:10.1097/01.NCQ.0000318028.67910.6b

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

Spence Laschinger, H. K. S., McGillis Hall, L., Pedersen, C., & Almost, J. (2005). A psychometric analysis of the patient satisfaction with nursing care quality questionnaire: An actionable approach to measuring patient satisfaction. *Journal of Nursing Care Quality, 20*(3), 220-230.

Spence Laschinger, H. K. S., Wilk, P., Cho, J., & Greco, P. (2009). Empowerment, engagement and perceived effectiveness in nursing work environments: Does experience matter? *Journal of Nursing Management, 17*(5), 636-646. doi:10.1111/j.1365-2834.2008.00907.x

Spence Laschinger, H. K. S., Wong, C. A., Cummings, G., & Grau, A. (2014). Resonant leadership and workplace empowerment: The value of positive organizational cultures in reducing workplace incivility. *Nurse Economic$, 32*(1), 5-15,.

Spillane, J. P. (2006). *Distributed leadership*. New York, NY: Jossey-Bass.

Squires, M. (2010). *The influence of perceived fairness and relational leadership on nursing safety climate and work environment*. University of Toronto, Canada. Retrieved from https://tspace.library.utoronto.ca/bitstream/1807/26385/1/Squires_Mae_E_201011_PhD_thesis.pdf

Squires, M., Tourangeau, A., Spence Laschinger, H. K. S., & Doran, D. (2010). The link between leadership and safety outcomes in hospitals. *Journal of Nursing Management, 18*(8), 914-925. doi:10.1111/j.1365-2834.2010.01181.x

Statistics New Zealand. (2005). *Statistical standard for ethnicity*. Retrieved March 18, 2017, from http://www.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/ethnicity.aspx

Statistics New Zealand. (2013). *2013 Census data dictionary* (Vol. 2017). Wellington, New Zealand: Statistics New Zealand. Retrieved from http://www.stats.govt.nz

Stiefel, M., & Nolan, K. (2012). *A guide to measuring the triple aim: Population health, experience of care, and per capita cost*. Cambridge, Massachusetts: Institute for Healthcare Improvement.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon/Pearson Education.

The Australian Council on Healthcare Standards. (2015). *Australasian clinical indicator report; 2007 - 2014*. Sydney, Australia: ACHS Performance and Outcomes Service (POS).

The Beryl Institute. (2018). *Defining patient experience*. Retrieved April 23, 2018, from http://www.theberylinstitute.org/?page=definingpatientexp

Thorman, K. E. (2004). Nursing leadership in the boardroom. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 33*(3), 381-387.

Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly, 22*(1), 121-131. doi:http://dx.doi.org/10.1016/j.leaqua.2010.12.011

Tomlinson, J. (2012). Exploration of transformational and distributed leadership. *Nursing Management, 19*(4), 30-34.

Tourangeau, A. E. (2005). A theoretical model of the determinants of mortality. *Advances in Nursing Science, 28*(1), 58-69.

Tourangeau, A. E., Doran, D. M., Hall, L. M., O'Brien Pallas, L., Pringle, D., Tu, J. V., & Cranley, L. A. (2007). Impact of hospital nursing care on 30-day mortality for acute medical patients. *Journal of Advanced Nursing, 57*(1), 32-44. doi:10.1111/j.1365-2648.2006.04084.x

Toussaint, J. (2013). A management, leadership, and board road map to transforming care for patients. *Frontiers of Health Services Management, 29*(3), 3-15.

Trinchero, E., Brunetto, Y., & Borgonovi, E. (2013). Examining the antecedents of engaged nurses in Italy: Perceived Organisational Support (POS); satisfaction with training and development; discretionary power. *Journal of Nursing Management, 21*(6), 805-816.

Uhl-Bien, M. (2006). Relational leadership theory: Exploring the social processes of leadership and organizing. *Leadership Quarterly, 17*(6), 654-676. doi:10.1016/j.leaqua.2006.10.007

Van Bogaert, P., Clarke, S., Roelant, E., Meulemans, H., & Van de Heyning, P. (2010). Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: A multilevel modelling approach. *Journal of Clinical Nursing, 19*(11-12), 1664-1674. doi:10.1111/j.1365-2702.2009.03128.x

Van Bogaert, P., Clarke, S., Vermeyen, K., Meulemans, H., & Van de Heyning, P. (2009). Practice environments and their associations with nurse-reported outcomes in Belgian hospitals: Development and preliminary validation of a Dutch adaptation of the Revised Nursing Work Index. *International Journal of Nursing Studies, 46*(1), 55-65. doi:10.1016/j.ijnurstu.2008.07.009

Van Bogaert, P., Clarke, S., Willems, R., & Mondelaers, M. (2012). Staff engagement as a target for managing work environments in psychiatric hospitals: Implications for workforce stability and quality of care. *Journal of Clinical Nursing, 22*, 1717-1728.

Van Bogaert, P., Meulemans, H., Clarke, S., Vermeyen, K., & Van de Heyning, P. (2009). Hospital nurse practice environment, burnout, job outcomes and quality of care: Test of a structural equation model. *Journal of Advanced Nursing, 65*(10), 2175-2185. doi:10.1111/j.1365-2648.2009.05082.x

Van Bogaert, P., Wouters, K., Willems, R., Mondelaers, M., & Clarke, S. (2013). Work engagement supports nurse workforce stability and quality of care: nursing team-level analysis in psychiatric hospitals. *Journal of Psychiatric & Mental Health Nursing, 20*(8), 679-686. doi:10.1111/jpm.12004

van der Colff, J. J., & Rothmann, S. (2009). Occupational stress, sense of coherence, coping, burnout and work engagement of registered nurses in South Africa. *SA Journal of Industrial Psychology, 35*(1), 1-10.

VanDeVelde-Coke, S., Doran, D., Grinspun, D., Hayes, L., Sutherland Boal, A., Velji, K., . . . Hannah, K. (2012). Measuring outcomes of nursing care, improving the health of Canadians: NNQR (C), C-HOBIC and NQuiRE. *Nursing Leadership, 25*(2), 26-37.

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

Vollman, K. (2009). Back to the fundamentals of care: Why now, why us! *Australian Critical Care, 22*(4), 152-154. doi:http://dx.doi.org.ezproxy.aut.ac.nz/10.1016/j.aucc.2009.09.001

Wagner, J., Warren, S., Cummings, G., Smith, D., & Olson, J. (2013). Resonant leadership, workplace empowerment, and "spirit at work": Impact on RN job satisfaction and organizational commitment. *Canadian Journal of Nursing Research, 45*(4), 108-128.

Waitemata District Health Board. (2014). *Patient and visitor feedback: Friends and family test*. Retrieved July 26, 2015, from http://www.qualityaccounts.health.nz/our-strategic-plan-priorities/future-focus-for-2014-15/projects-underway-2014-15/patient-visitor-feedback

Waitemata District Health Board. (2015). *Waitemata DHB population profile*. Retrieved April 25, 2018, from http://www.waitematadhb.govt.nz/dhb-planning/population-profile/

Waitemata District Health Board. (2018). *Our promise & values*. Retrieved June 1, 2018, from http://www.waitematadhb.govt.nz/about-us/our-promise-values/

Walker, L. (2015). Walking in two worlds. *Kai Tiaki Nursing New Zealand, 21*(5), 34-35.

Warshawsky, N. E., & Havens, D. S. (2011). Global use of the Practice Environment Scale of the Nursing Work Index. *Nursing Research, 60*(1), 17-31. doi:10.1097/NNR.0b013e3181ffa79c

West, M., & Dawson, J. (2012). *Employee engagement and NHS performance*. London, UK: Kings Fund.

White, M., Wells, J. S. G., & Butterworth, T. (2014). The impact of a large-scale quality improvement programme on work engagement: Preliminary results from a national cross-sectional-survey of the 'Productive Ward'. *International Journal of Nursing Studies, 51*(12), 1634-1643. doi:10.1016/j.ijnurstu.2014.05.002

Wiechula, R., Conroy, T., Kitson, A., Marshall, R. J., Whitaker, N., & Rasmussen, P. (2016). Umbrella review of the evidence: What factors influence the caring relationship between

a nurse and patient? *Journal of Advanced Nursing, 72*(4), 723-734. doi:10.1111/jan.12862

Wilson, D. (Ed.). (2017). *Culturally safe research with vulnerable populations (Māori)*. Singapore: Springer.

Wilson, D., Diers, D., Carryer, J. B., Spicer, J., McCloskey, B., Budge, C., & Barton, P. (2010). Nursing and Māori patient outcomes: *An analysis of outcomes potentially sensitive to nursing.* Poster Presentation. International Network of Indigenous Health Knowledge & Development – Knowing our Roots: Indigenous Medicines, Health Knowledge and Best Practice', Port Madison Indian Reservation, Suquamish Nation, Washington, USA.

Wilson, D., & Neville, S. (2009). Culturally safe research with vulnerable populations. *Contemporary Nurse, 33*(1), 69-79.

Winiata, W. (2012). Leadership styles and nursing in a whanau ora context. *Whitireia Nursing Journal*(19), 43-50.

Wolf, J. A., Niederhauser, V., Marshburn, D., & LaVela, S. L. (2014). Defining patient experience. *Patient Experience Journal, 1*(1), 7-19.

Wong, C. A., Cummings, G., & Ducharme, L. (2013). The relationship between nursing leadership and patient outcomes: a systematic review update. *Journal of Nursing Management, 21*(5), 709-724. doi:10.1111/jonm.12116

Wong, C. A., Elliott-Miller, P., Laschinger, H., Cuddihy, M., Meyer, R. M., Keatings, M., . . . Szudy, N. (2015). Examining the relationships between span of control and manager job and unit performance outcomes. *Journal of Nursing Management, 23*(2), 156-168.

Wong, C. A., & Laschinger, H. K. S. (2013). Authentic leadership, performance, and job satisfaction: The mediating role of empowerment. *Journal of Advanced Nursing, 69*(4), 947-959. doi:10.1111/j.1365-2648.2012.06089.x

Wong, C. A., Spence Laschinger, H. K. S., & Cummings, G. (2010). Authentic leadership and nurses' voice behaviour and perceptions of care quality. *Journal of Nursing Management, 18*(8), 889-900. doi:10.1111/j.1365-2834.2010.01113.x

World Health Organization. (2007). *WHO global report on falls prevention in older age.* Geneva, Switzerland: WHO.

Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology, 9*(2), 79-94.

Appendix A: Resonant Leadership

Resonant Leadership Scale - Observer (Cummings, 2008)

Leadership

In answering the following, please focus on the formal <u>leader</u> of the *clinical program or unit where you work the majority of your time.*

Please indicate your level of agreement with the following statements.

The leader in my clinical program or unit ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Looks for feedback even when it is difficult to hear.**	☐	☐	☐	☐	☐
2. Acts on values even if it is at a personal cost.	☐	☐	☐	☐	☐
3. Focuses on successes rather than failures.**	☐	☐	☐	☐	☐
4. Supports teamwork to achieve goals/outcomes.	☐	☐	☐	☐	☐
5. Calmly handles stressful situations.**	☐	☐	☐	☐	☐
6. Actively listens, acknowledges, and then responds to requests and concerns.**	☐	☐	☐	☐	☐
7. Actively mentors or coaches performance of others**	☐	☐	☐	☐	☐
8. Effectively resolves conflicts that arise.**	☐	☐	☐	☐	☐
9. Engages me in working toward a shared vision.	☐	☐	☐	☐	☐
10. Allows me freedom to make important decisions in my work.	☐	☐	☐	☐	☐

** 6 items are used in the abbreviated version of the Resonant Leadership Scale.

Resonant leadership scores are the average of the sum of ratings on the number of valid individual questions.

Scores on specific items can also be compared from one time measurement to another for individual respondents.

Appendix B: Leader-member Exchange Theory

Table 3
Recommended Measure of LMX (LMX 7)

1. Do you know where you stand with your leader ... do you usually know how satisfied your leader is with what you do? (Does your member usually know)

   | Rarely | Occasionally | Sometimes | Fairly Often | Very Often |

2. How well does your leader understand your job problems and needs? (How well do you understand)

   | Not a Bit | A Little | A Fair Amount | Quite a Bit | A Great Deal |

3. How well does your leader recognize your potential? (How well do you recognize)

   | Not at All | A Little | Moderately | Mostly | Fully |

4. Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work? (What are the changes that you would)

   | None | Small | Moderate | High | Very High |

5. Again, regardless of the amount of formal authority your leader has, what are the chances that he/she would "bail you out," at his/her expense? (What are the chances that you would)

   | None | Small | Moderate | High | Very High |

6. I have enough confidence in my leader that I would defend and justify his/her decision if he/she were not present to do so? (Your member would)

   | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |

7. How would you characterize your working reltionship with your leader? (Your member)

   | Extremely Innefective | Worse Then Average | Average | Better Than Average | Extremely Effective |

Notes: Continuous scale of sum of 5-point items (1 left to 5 right). Leader's form consists of same seven items asked about member of (leader in parentheses). Expected agreement between leader and member reports is positive and strong and used as index of quality of data.

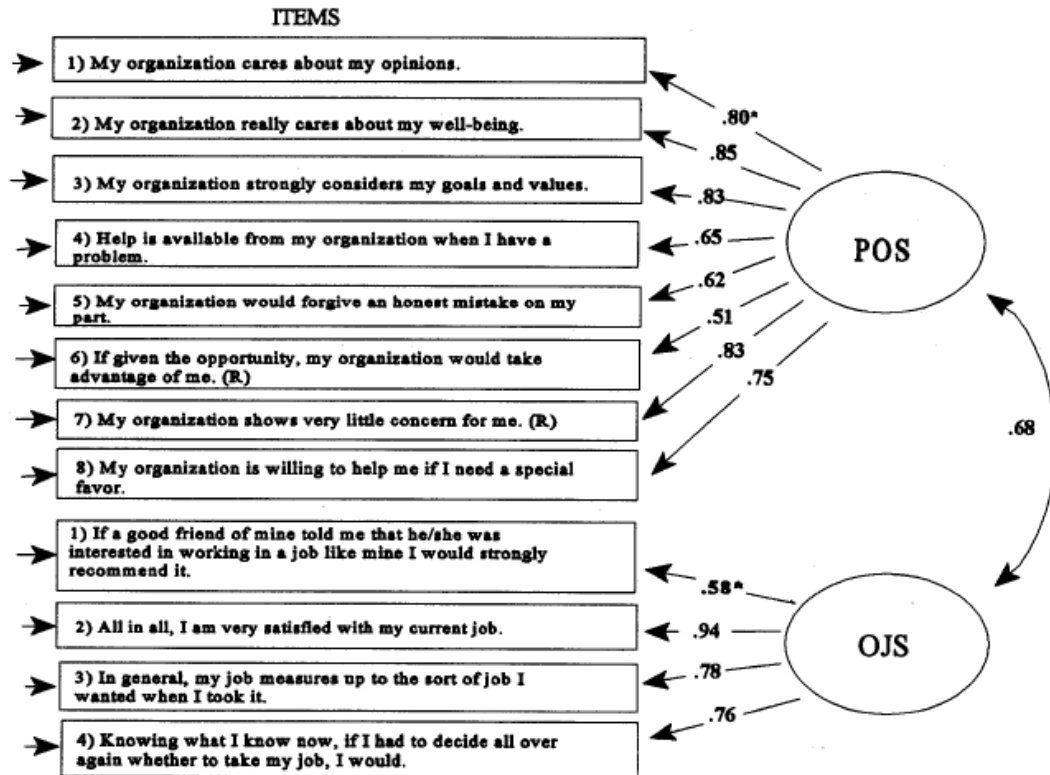## Appendix C: Perception of Organisational Support

ITEMS

Figure 1. Confirmatory factor analysis with a two-factor solution for items assessing perceived organizational support (POS) and overall job satisfaction (OJS). Indicator loadings and the factor correlation are all standardized. Asterisk indicates items with loadings fixed to 1.0 to set the metric of latent variable. R = reverse-coded items that have been recoded.

Appendix D: Utrecht Work Engagement

English version

Work & Well-being Survey (UWES) ©

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

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

1. _____ At my work, I feel bursting with energy* *(VI1)*
2. _____ I find the work that I do full of meaning and purpose *(DE1)*
3. _____ Time flies when I'm working *(AB1)*
4. _____ At my job, I feel strong and vigorous *(VI2)**
5. _____ I am enthusiastic about my job *(DE2)**
6. _____ When I am working, I forget everything else around me *(AB2)*
7. _____ My job inspires me *(DE3)**
8. _____ When I get up in the morning, I feel like going to work *(VI3)**
9. _____ I feel happy when I am working intensely *(AB3)**
10. _____ I am proud on the work that I do *(DE4)**
11. _____ I am immersed in my work *(AB4)**
12. _____ I can continue working for very long periods at a time *(VI4)*
13. _____ To me, my job is challenging *(DE5)*
14. _____ I get carried away when I'm working *(AB5)**
15. _____ At my job, I am very resilient, mentally *(VI5)*
16. _____ It is difficult to detach myself from my job *(AB6)*
17. _____ At my work I always persevere, even when things do not go well *(VI6)*

* Shortened version (UWES-9); VI= vigor; DE = dedication; AB = absorption

Appendix E: Unit Care Quality

Appendix

(a) Organizational support subscale (nurses were asked whether the following were present in their current job, and responses were scored as follows: 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Strongly Agree).

1. Adequate support services allow me to spend time with my patients.
2. Physicians and nurses have good working relationships.
3. Nursing controls its own practice.
4. Enough time and opportunity to discuss patient care problems with other nurses.
5. Enough registered nurses to provide quality patient care.
6. Freedom to make important patient care and work decisions.
7. Not being placed in a position of having to do things that are against my nursing judgment.
8. Much teamwork between nurses and doctors.
9. Patient assignments foster continuity of care (i.e. the same nurse cares for the patient from one day to the next).

(b) Items related to quality of care

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

1. Excellent   2. Good   3. Fair   4. Poor

How would you describe the quality of nursing care delivered on your last shift?

1. Excellent   2. Good   3. Fair   4. Poor

Overall, over the past year would you say the quality of patient care in your hospital has

1. improved?   2. remained the same?   3. deteriorated?

How confident are you that your patients are able to manage their care when discharged from the hospital?
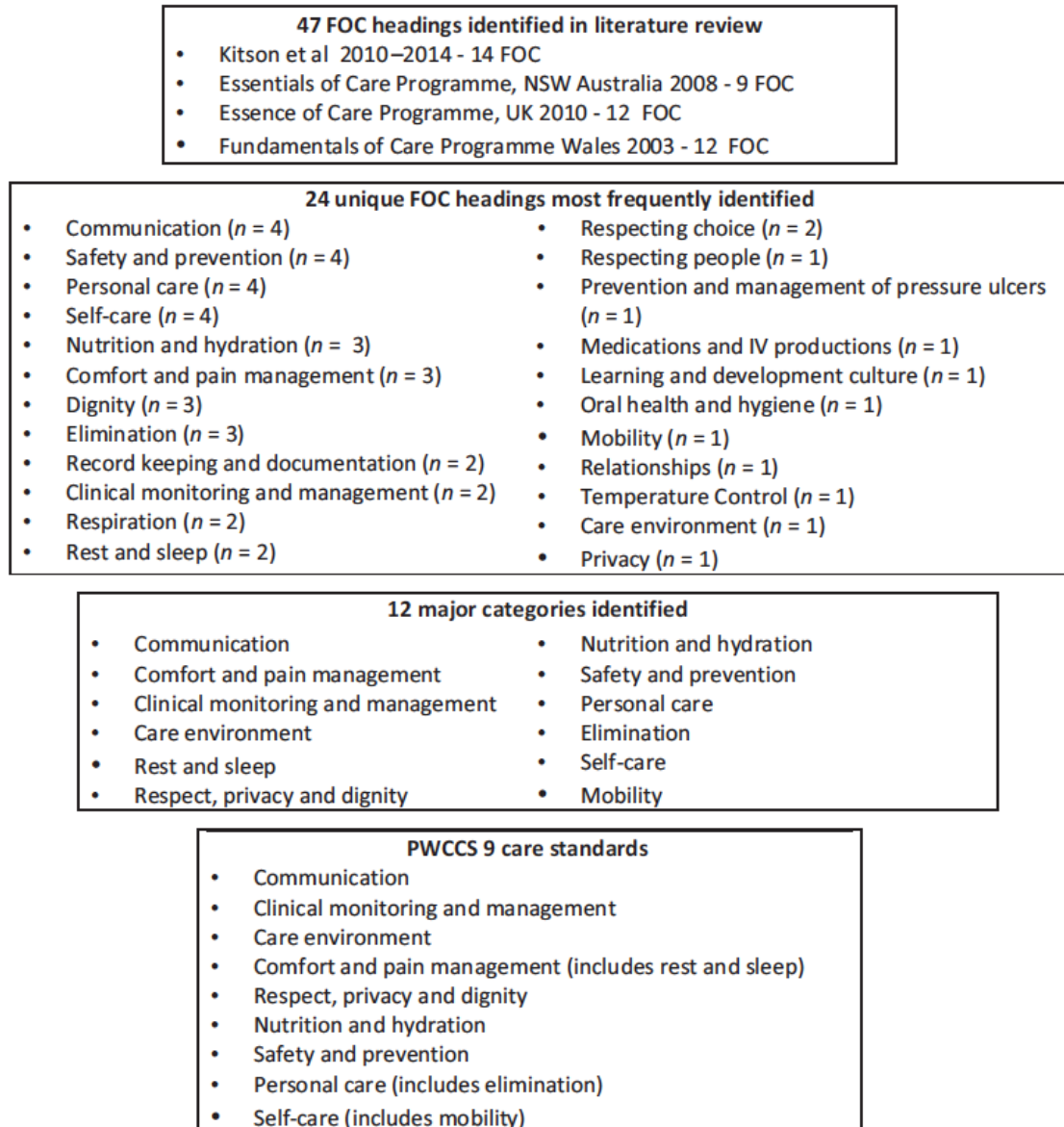
1. Very confident   2. Confident   3. Somewhat confident
4. Not at all confident

Aiken et al. (2002, p. 13)

Appendix F: Fundamentals of Care

Inductive approach to refining fundamentals of care for the Patient and Whanau Centred Care

Standards Figure 2 in Parr et al. (2018).

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┌─────────────────────────────────────────────────────────────────┐
│             47 FOC headings identified in literature review       │
│   •   Kitson et al  2010–2014 - 14 FOC                            │
│   •   Essentials of Care Programme, NSW Australia 2008 - 9 FOC     │
│   •   Essence of Care Programme, UK 2010 - 12  FOC                 │
│   •   Fundamentals of Care Programme Wales 2003 - 12  FOC          │
└─────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────────────┐
│              24 unique FOC headings most frequently identified            │
│  •  Communication ($n$ = 4)          •  Respecting choice ($n$ = 2)        │
│  •  Safety and prevention ($n$ = 4)  •  Respecting people ($n$ = 1)        │
│  •  Personal care ($n$ = 4)          •  Prevention and management of       │
│  •  Self-care ($n$ = 4)                 pressure ulcers ($n$ = 1)          │
│  •  Nutrition and hydration ($n$ = 3)•  Medications and IV productions     │
│  •  Comfort and pain management         ($n$ = 1)                         │
│     ($n$ = 3)                        •  Learning and development culture   │
│  •  Dignity ($n$ = 3)                   ($n$ = 1)                         │
│  •  Elimination ($n$ = 3)            •  Oral health and hygiene ($n$ = 1)  │
│  •  Record keeping and documentation •  Mobility ($n$ = 1)                │
│     ($n$ = 2)                        •  Relationships ($n$ = 1)           │
│  •  Clinical monitoring and          •  Temperature Control ($n$ = 1)     │
│     management ($n$ = 2)             •  Care environment ($n$ = 1)        │
│  •  Respiration ($n$ = 2)            •  Privacy ($n$ = 1)                 │
│  •  Rest and sleep ($n$ = 2)                                             │
└───────────────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────┐
│                   12 major categories identified                  │
│   •  Communication              •  Nutrition and hydration        │
│   •  Comfort and pain management•  Safety and prevention          │
│   •  Clinical monitoring and    •  Personal care                  │
│      management                 •  Elimination                    │
│   •  Care environment           •  Self-care                      │
│   •  Rest and sleep             •  Mobility                       │
│   •  Respect, privacy and dignity                                 │
└─────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────┐
│                      PWCCS 9 care standards                       │
│   •  Communication                                                │
│   •  Clinical monitoring and management                           │
│   •  Care environment                                             │
│   •  Comfort and pain management (includes rest and sleep)        │
│   •  Respect, privacy and dignity                                 │
│   •  Nutrition and hydration                                      │
│   •  Safety and prevention                                       │
│   •  Personal care (includes elimination)                         │
│   •  Self-care (includes mobility)                                │
└─────────────────────────────────────────────────────────────────┘
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Appendix G: Bureaucracy scale

1.	Our work is highly regulated by bureaucratic procedures...	1	2	3	4	5
2.	There are a lot of rules and regulations in this organisation...	1	2	3	4	5
3.	Decisions must go through many layers of management before they are finalised........................	1	2	3	4	5

Appendix H: Willingness to try new food products; DSI scale

Willingness to Try New Food Products: Results from the Domain Specific Innovativeness Scale [DSI]

Table 1 presents the results obtained with the application of the **Domain Innovativeness Scale** in Brazil and in the UK.

Table 1: Means, Standard Deviation, Score and Reliability of the Domain Specific Innovativeness Scale [DSI]

	BRA n=279		UK n=101	
	Mean	S.D	Mean	S.D
1. I buy new, different or innovative foods before anyone else I know.	3.27	1.15	2.97	1.08
2. Generally I am amongst the first of my circle of friends to buy new, different or innovative foods.	2.98	1.11	2.95	1.08
3. Compared to my friends, I purchase more new, different or innovative foods.	3.11	1.12	3.08	1.05
4. If new, different or innovative foods are available in shops and supermarkets I always purchase them.*	3.99	1.01	3.91	1.15
5. Generally I am the first amongst my friends to remember a brand of new, different or innovative foods.*	3.65	1.12	3.48	1.18
6. I do purchase new, different or innovative foods even if I have not tasted/experienced them beforehand.*	3.57	1.32	3.54	1.46
DSI SUM SCORES	**20.57**	**4,81**	**19.93**	**4.89**
Cronbach's Alpha	0.798		0.782	

Source: research data.
Means based on a 5-Point Likert Scale, where 1 corresponds to 'totally disagree', 3 corresponds to 'neither agree nor disagree' and 5 corresponds to 'totally disagree'.
*Original scale reverse items were changed for better comprehension
Means difference at the 5% level was not significant.

Barcellos et al. (2009, p. 55)

Appendix I: LEON Survey

Leadership and engagement of nurses (LEON) survey

Information to participant

- You are being invited to participate in this research as a frontline nurse, clerical staff or line manager employed on an adult inpatient medical surgical ward or unit at Waitemata DHB. You may be a registered nurse (RN), enrolled nurse (EN), health care assistant (HCA) or administrative and clerical staff who report to the unit manager. Bureau (temporary), medical and allied health staff are excluded.
- It should take less than 10 minutes to complete the survey.
- The information provided will not be attributable to you or your unit as all data will be de-identified prior to being provided to the researcher.
- There are no right or wrong answers to the survey questions and you should answer the questions as honestly as possible.
- Whether you choose to participate or not will neither advantage nor disadvantage you.
- By completing this questionnaire and pressing "submit" this will be taken as indicating your consent to participate as outlined in the information sheet.

Thank you for taking the time to complete this survey.
Please contact LEONsurvey@waitematadhb.govt.nz if you have any queries.

Once completed, please put in self-addressed
envelope and internal post to:

LEON Survey
C/- Workforce Development
Level 1, 43 Tahoroto Road
North Shore Hospital

1

Leadership and engagement of nurses (LEON) survey

Section One

Please indicate your perceptions of the quality of care which are described in the following statements by selecting the response of your choice.

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

  ◯ Excellent ◯ Good ◯ Fair ◯ Poor

* 2. How would you describe the quality of nursing care delivered on your last shift?

  ◯ Excellent ◯ Good ◯ Fair ◯ Poor

* 3. Overall, over the past year would you say the quality of patient care in your hospital has

  ◯ Improved ◯ Remained the same ◯ Deteriorated

* 4. How confident are you that your patients are able to manage their care when discharged from the hospital?

  ◯ Very confident ◯ Confident ◯ Somewhat confident ◯ Not at all confident

Leadership and engagement of nurses (LEON) survey

Section 2

* 5. The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, select the response 'never' in the space after the statement. If you have had this feeling, indicate how often you feel it by selecting the response that best describes how frequently you feel that way.

	Never	Almost never - a few times a year or less	Rarely - once a month or less	Sometimes - a few times a month	Often - once a week	Very often - a few times a week	Always - every day
At my work, I feel bursting with energy	○	○	○	○	○	○	○
At my job, I feel strong and vigorous	○	○	○	○	○	○	○
I am enthusiastic about my job	○	○	○	○	○	○	○
My job inspires me	○	○	○	○	○	○	○
When I get up in the morning, I feel like going to work	○	○	○	○	○	○	○
I feel happy when I am working intensely	○	○	○	○	○	○	○
I am proud of the work that I do	○	○	○	○	○	○	○
I am immersed in my work	○	○	○	○	○	○	○
I get carried away when I'm working	○	○	○	○	○	○	○

Leadership and engagement of nurses (LEON) survey

Section Three

* 6. Please indicated the extent of your agreement with each item by selecting the response of your choice

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Our work is highly regulated by bureaucratic procedures	○	○	○	○	○
There are a lot of rules and regulations in this organisation	○	○	○	○	○
Decisions must go through many layers of management before they are finalised	○	○	○	○	○

Leadership and engagement of nurses (LEON) survey

Section 4

Please describe your relationship with the leader to whom you report e.g. the Charge Nurse or Unit Manager, by indicating the degree to which you think the item is true for you by selecting one of the responses that appear below the item.

* 7. **Do you know where you stand with your leader and do you usually know how satisfied your leader is with what you do?**

○ Rarely ○ Occasionally ○ Sometimes ○ Fairly often ○ Very often

* 8. **How well does your leader understand your job problems and needs?**

○ Not a bit ○ A little ○ A fair amount ○ Quite a bit ○ A great deal

* 9. **How well does your leader recognise your potential?**

○ Not at all ○ A little ○ Moderately ○ Mostly ○ Fully

* 10. **Regardless of how much formal authority your leader has built into his or her position, what are the chances that your leader would use his or her power to help you solve problems in your work?**

○ None ○ Small ○ Moderate ○ High ○ Very High

* 11. **Again, regardless of how much formal authority your leader has, what are the chances that he or she would 'bail you out' at his or her expense?**

○ None ○ Small ○ Moderate ○ High ○ Very High

* 12. **I have enough confidence in my leader that I would defend and justify his or her decision if he or she were not present to do so.**

○ Strongly disagree ○ Disagree ○ Neutral ○ Agree ○ Strongly agree

* 13. **How would you characterise your working relationship with your leader?**

○ Extremely ineffective ○ Worse than average ○ Average ○ Better than average ○ Extremely effective

PLEASE COMPLETE ALL QUESTIONS   5

Section 5

* 14. Please indicate the extent of your agreement with each item by selecting the response of your choice.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
My organization cares about my opinions	○	○	○	○	○	○	○
My organisation really cares about my well-being	○	○	○	○	○	○	○
My organisation strongly considers my goals and values	○	○	○	○	○	○	○
Help is available from my organisation when I have a problem	○	○	○	○	○	○	○
My organisation would forgive an honest mistake on my part	○	○	○	○	○	○	○
If given the opportunity, my organistion would take advantage of me.	○	○	○	○	○	○	○
My organisation shows very little concern for me	○	○	○	○	○	○	○
My organisation is willing to help me if I need a special favour	○	○	○	○	○	○	○

Leadership and engagement of nurses (LEON) survey

Section 6

In answering the following questions, please focus on the formal leader of the ward, clinical program or unit where you work the majority of your time.

* 15. Please indicate your level of agreement with the following statements by selecting the response of your choice. The leader in my ward, clinical program or unit...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Looks for feedback even when it is difficult to hear.	○	○	○	○	○
Acts on values even if it is at a personal cost	○	○	○	○	○
Focuses on successes rather than failures	○	○	○	○	○
Supports teamwork to achieve goals/outcomes.	○	○	○	○	○
Calmly handles stressful situations.	○	○	○	○	○
Actively listens, acknowledges, and then responds to requests and concerns.	○	○	○	○	○
Actively mentors or coaches performance of others.	○	○	○	○	○
Effectively resolves conflicts that arise.	○	○	○	○	○
Engages me in working toward a shared vision.	○	○	○	○	○
Allows me freedom to make important decisions in my work	○	○	○	○	○

PLEASE COMPLETE ALL QUESTIONS

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Leadership and engagement of nurses (LEON) survey

Section 8

Please provide some additional information about you and your work environment by selecting the relevant response.

* 17. **Please select the ward, clinical program or unit where you work the majority of your time.** *(Note that the ward names you provide will be changed/ anonymised and the researcher will not know which responses are related to which ward.)*

[▲▼]

* 18. **Role**

○ Charge Nurse Manager ○ Registered Nurse (including ACCN) ○ Enrolled Nurse ○ Health Care Assistant
○ Ward Clerk, Administrative assistant or Admin clerk

* 19. **Gender**

○ Female ○ Male ○ Transgender

* 20. **Employment Status**

○ Full-time ○ Part-time

* 21. **Please indicate your highest level of completed education.**

○ High School ○ Vocational certificate ○ Baccalaureate degree ○ Post-graduate certificate
○ Post graduate diploma ○ Masters degree ○ Doctorate degree

* 22. **Please indicate your primary work location (select one only)**

○ Medical or surgical ○ Assessment or Short Stay ○ Mental Health, Post-acute or critical care

* 23. **Please indicate your age**

○ 24 and under ○ 25-34 ○ 35-44 ○ 45-54 ○ 55-64 ○ 65 and over

* 24. Total number of years in professional practice (count present year as complete year).

[   ]

* 25. Total number of years at current organisation (count present year as complete year)

[   ]

* 26. Total number of years on current unit (count present year as complete year).

[   ]

* 27. Which ethnic group do you belong to?

◯ NZ European ◯ Maori ◯ Samoan ◯ Cook Island Maori ◯ Tongan ◯ Niuean ◯ Chinese ◯ Indian

◯ Other (please specify)

[   ]

By completing this questionnaire and pressing **done**' this will be taken as indicating your **consent to participate** as outlined in the information sheet.

Thank you for taking the time to complete this survey.

10

Appendix J: Permissions

Dear Jenny

Thank you for writing to request the Resonant Leadership Scale. Patrick, my research manager, will get back to you with copies of the Self-assessment and Observer scales.

Please stay connected with us about the progress of your research if you use this scale.

Best regards

greta

Greta G. Cummings RN PhD FCAHS FAAN

Centennial Professor, University of Alberta I http://uofa.ualberta.ca/nursing/about/contact-us-and-people/academic-listing/gretac

Professor, Faculty of Nursing, University of Alberta

Principal, *CLEAR Outcomes (Connecting Leadership Education & Research)* Research Program I http://www.clear.ualberta.ca/

Immediate Past President, *International Society of Nurses in Cancer Care* I www.isncc.org

Adjunct Professor School of Nursing, University of Adelaide

Edmonton Clinic Health Academy I University of Alberta I 11405-87 Ave, Edmonton, AB I Canada T6G 1C9
T 001-780-492-8703 | F 001-780-492-6186 | gretac@ualberta.ca

On Sun, May 17, 2015 at 11:08 PM, Jenny Parr <jennyparr@me.com> wrote:

Dear Greta

I have been reading your work with great interest. I am a doctoral student in Auckland NZ, and I am trying to track down a Resonant Leadership scale to use with Charge Nurse Managers in Auckland. I was hoping you could help me or point me in the direction of this.

Wagner (2010) referred to a 10 point scale from Estabrooks, C., Squires, J. E., Cummings, G. G., Birdsell, J. M., & Norton, P. G. (2009). But again, I can't see this within the publication.

I'm really sorry to come to you directly, but hope that you can help me.
Many thanks

Jenny Parr

73 Vermont Street
Ponsonby
Auckland 1011

p: -
m: 021 943 038
e: jennyparr@me.com

From: Lmxlotus@aol.com
Subject: Re: LMX instrument permission
Date: 16 August 2015 22:06
To: jennyparr@me.com
Cc: gjoang@aol.com

You have it and good luck.

In a message dated 8/16/2015 2:02:40 A.M. Central America Standard T, jennyparr@me.com writes:

> Hi George
> Thank you for this. I am still hoping to use the LMX-7 for my study. Can you confirm that you are willing to provide your permission.
> Many thanks
> Jenny
>
> tel: 021943038
> Sent from my iPhone
>
> On 14 Aug 2015, at 03:30, Lmxlotus@aol.com wrote:
>
>> Please see link below as well as the attached paper.
>>
>> SHRM-SIOP White Paper
>>
>> In a message dated 8/8/2015 6:22:04 P.M. Pacific Daylight Time, jennyparr@me.com writes:
>>
>>> Dear George
>>>
>>> I found this contact email via linked-in. I am finalising my doctorate proposal in Auckland NZ, and am aiming to use the LMX-7.
>>>
>>> Although still drafting the proposal, essentially I am aiming to explore the effects of leadership style (resonant), unit level supervisor / subordinate relationships (LMX-7) and perceived organisational support, on engagement and unit level patient outcomes.
>>>
>>> I was hoping to obtain your permission to use the scale. Many thanks and I look forward to hearing from you.
>>>
>>> Best wishes
>>> Jenny
>>>
>>> tel: 021943038
>>> Sent from my iPhone
>>
>> <Leader Motivated Excellence-publication.pdf>

From: **Robert Eisenberger** eisenber@udel.edu
Subject: Re: POS - permission to use
Date: 15 August 2015 05:51
To: Jenny Parr jennyparr@me.com

Hi Jenny,
I am happy to give you permission to used the POS scale.
Cordially,
Bob

--
Robert Eisenberger
Professor of Psychology
College of Liberal Arts & Soc. Sciences
Professor of Management
C. T. Bauer College of Business
University of Houston
reisenberger2@uh.edu
(302)353-8151

On Sat, Aug 8, 2015 at 8:26 PM, Jenny Parr <jennyparr@me.com> wrote:

> Dear Robert
> I am finalising my doctorate proposal in Auckland NZ, and am aiming to use the POS Scale.
>
> Although still drafting the proposal, essentially I am aiming to explore the effects of nurse leadership style (resonant), unit level supervisor / subordinate relationships (LMX-7) and perceived organisational support (POS), on engagement and unit level patient outcomes in a nursing context in a NZ hospital system.
>
> I was hoping to obtain your permission to use the scale. Many thanks and I look forward to hearing from you.
>
> Best wishes
>
> Jenny Parr
>
> 73 Vermont Street
> Ponsonby
> Auckland 1011
>
> p: -
> m: 021 943 038
> e: jennyparr@me.com

From: **Aiken, Linda** laiken@nursing.upenn.edu
Subject: RE: Permission to use 4 items relating to the perceptions of unit care quality
Date: 6 November 2015 at 09:53
To: Jenny Parr jennyparr@me.com

Hello,
Yes you have my permission to use the items. Best wishes, Linda

Linda H. Aiken, Ph.D.
The Claire M. Fagin Leadership Professor of Nursing
Professor of Sociology
Director, Center for Health Outcomes and Policy Research
University of Pennylvania
418 Curie Boulevard
Claire M. Fagin Hall, 387R
Philadelphia, PA 19104-4217
Phone: 215-898-9759
Fax: 215-573-2062
Website: http://nursing.upenn.edu/CHOPR
Twitter: @LindaAiken_Penn

From: Jenny Parr [mailto:jennyparr@me.com]
Sent: Wednesday, November 04, 2015 8:29 PM
To: Aiken, Linda <laiken@nursing.upenn.edu>
Subject: Permission to use 4 items relating to the perceptions of unit care quality

Dear Linda

I have been reading your work with great interest. I am a doctoral student in Auckland NZ, and I am aiming to explore the effects of leadership style (resonant), unit level supervisor / subordinate relationships and perceived organisational support, on engagement and unit level patient outcomes in a survey in a District Health Board in Auckland next May.

I would be grateful if you would grant me permission to use the 4 items relating to the perceptions of unit care quality which you originally used in your articles Aiken et al. (2001) and Aiken, Clarke, and Sloane (2002).

Many thanks and I look forward to hearing from you.
Regards
Jenny

Jenny Parr

73 Vermont Street
Ponsonby
Auckland 1011

p: -

Appendix K: Participant Information Sheet

Participant Information Sheet

Date Information Sheet Produced:

1st June 2016

Project Title

"What is the relationship between engagement, charge nurse manager leadership, the leadership relationship, practice environment and patient outcomes?"

An Invitation

I am Jenny Parr, Associate Director of Nursing at Waitemata DHB and a Doctoral Candidate at Auckland University of Technology. I hope you will be willing to participate in this research that involves completing an online survey called the Leadership and Engagement of Nurses (LEON) survey. Your participation is voluntary and you may withdraw at any time prior to submitting the survey. Although I hold the role of Associate Director of Nursing at the DHB, and am the Quality lead for Nursing, I hold no operational responsibility for you.

Even so, to preserve anonymity, I have arranged independent management of the survey to manage recruitment and reminders. You will not be asked to provide your name and before any information is passed to me, all the data will be de-identified. I will not be aware of which responses are related to which ward.

There are no right or wrong answers to the survey questions and whether you choose to participate or not will neither advantage nor disadvantage you.

What is the purpose of this research?

As a senior manager and senior nurse at the largest and fastest growing DHB in New Zealand, I am focused on implementing factors which improve the quality of care, patient safety and the patient experience. Addressing this challenge is critical to the quality of patient care and the reputation of the nursing profession. Researchers are beginning to examine the relationships between the quality of the supervisor-supervisee relationship, perceived organisational support and engagement.

Work engagement has been significantly associated with nurse-reported quality of care. The relationship between engagement and organisational performance in health, such as quality nurse sensitive outcomes of care delivery, however, is an identified research gap.

The aim of this research is to explore the effects of leadership style, unit level supervisor-supervisee relationships and perceived organisational support, on engagement and unit level patient outcomes.

I am aiming to identify modifiable factors which will improve patient and staff experience and improve quality care. This topic is relevant to my area of responsibility at Waitemata DHB and it will also lead to my qualification as Doctor of Health Science and publications.

How was I identified and why am I being invited to participate in this research?

You are being invited to participate in this research as a frontline nurse, clerical staff or line manager employed on an adult inpatient medical surgical wards or units at Waitemata DHB. You may be registered nurses (RN), enrolled nurses (EN), health care assistants (HCA) or administrative and clerical staff and who reports to the unit manager. Bureau (temporary), medical and allied health staff are excluded. You will be contacted by Sarah McLeod, Workforce Development Manager using your DHB email address if you are listed as employed on the ward budget.

Staff not working in an adult inpatient ward or not directly managed by the CNM (eg: Bureau, temporary, medical and allied health staff) are excluded.

What will happen in this research?

You have been sent this information sheet along with a web link to complete an online survey (the LEON survey). Paper copies will also be available on wards for people without access to email. The LEON survey comprises previously validated scales about leadership, leadership relationships, perceptions of organisation Support and work engagement. You will be contacted by email from LEONsurvey@waitematadhb.govt.nz by Sarah McLeod, Workforce Development Manager with the survey and follow up reminders. Paper copies will be returned via internal post to Sarah McLeod. Posters will be displayed in Wards and Units, and the DHB Maori and Pacific leaders will be asked to communicate and raise awareness of the research to staff.

The LEON questionnaire includes 57 items that you can do at your leisure. It is anticipated that you may spend around 10 minutes answering the questions. You may complete the questionnaire either on line or a paper copy.

What are the discomforts and risks and how will they be alleviated?

Completing the questionnaire is not anticipated to provoke discomfort or embarrassment. Should you become uncomfortable, you can stop the survey.

What are the benefits?

Benefits to you

This survey gives you the opportunity to describe your experience of leadership, support and your engagement in your work as well as your perspectives of the quality of care provided to patients. The DHB has not undertaken organisational staff surveys for some years and therefore you may not have had an opportunity to do this. The outcome of the research is intended to demonstrate learning about the leadership style which has positive impact on engagement of nurses at work and its relationship to patient outcomes. This will provide nursing leaders the opportunity to shape leadership recruitment and leader development with these outcomes in mind.

Benefits to the primary researcher

I am aiming to identify factors which will improve patient and staff experience and improve quality care which is relevant to my area of responsibility. The research will also lead to a qualification as Doctor of Health Science and publications for me.

Benefits to the organisation

Waitemata DHB has two priorities: i) to improve outcomes and ii) to improve patient experience. The Waitemata DHB Experience Programme brings together staff and patient experience improvement initiatives as it is recognised that higher patient satisfaction is significantly higher where there is higher employee engagement. It may also reveal a set of measures for the DHB to monitor which are known to have an impact on staff and patient experience and provide opportunities to shape leadership recruitment and leader development.

How will my privacy be protected?

The questionnaire is anonymous. You will not be asked to provide your name. You will be asked what ward or unit you work on, but ward names will be anonymised. Only the Workforce Development Manager will know how many participants are from which unit. Before I receive any information, the data will be de-identified, that is, the ward names you have provided will be changed (anonymised) and I will not know which responses are related to which ward. Everyone involved in handing the data for this research have signed a confidentiality agreement. The data collected may be used again in the future as part of a longitudinal study.

What opportunity do I have to consider this invitation?

The data collection will be conducted over a period of two months between 1st June 2016 and 31st July 2016.

How do I agree to participate in this research?

Completion of the questionnaire (or survey) will be taken as indicating your consent to participate.

Will I receive feedback on the results of this research?

Yes, the findings will be disseminated within the DHB to relevant forums. They will also be presented at relevant national and international conferences and meetings. The findings will also be published in international journals which relate to quality improvement, nursing, psychology etc.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Professor Jane Koziol-McLain, Professor of Nursing, Director, Centre for Interdisciplinary Trauma Research, Auckland University of Technology

jane.koziol-mclain@aut.ac.nz, + 64 9 921 9670

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your future reference. You are also able to contact the research team as follows:

Jenny Parr, jennyparr@me.com + 64 21 943038

Professor Jane Koziol-McLain, jane.koziol-mclain@aut.ac.nz , + 64 9 921 9670

Professor Stephen T.T. Teo. Stephen.teo2@rmit.edu.au , + 61 416 034 757

He Kamaka Waiora, Maori Health Team +64 48668491 or ext 2324

Employees Assistance Programmes (EAP) - Self-refer by calling 0800-735-343 or download the Mobile Phone App. Your manager, charge nurse, supervisor etc or Occupational Health Nurse can also be asked to assist with a referral.

Researcher Contact Details:

Jenny Parr, Doctoral candidate, jenny.parr@waitematadhb.govt.nz + 64 21 943038

Approved by the Auckland University of Technology Ethics Committee on 29th April 2016, AUTEC Reference number 16/65.

Appendix L: LEON Survey Poster

Ever wonder about how our leadership relationships at work impact us?

Have your say

Leadership and engagement of nurses (LEON) survey

- **If** you are a nurse, clerical staff or line manager on an adult inpatient medical surgical ward/unit at WDHB we want to hear from you.
- In this doctoral research project we are exploring the relationship between engagement, leadership, the leadership relationship, practice environment and patient outcomes
- The online LEON survey (Leadership and Engagement of Nurses) will take about **10** minutes to complete
- The survey is voluntary and anonymous.
- Contact LEONsurvey@waitematadhb.govt.nz

Appendix M: AUTEC Approval

AUTEC Secretariat

Auckland University of Technology
D-88, WU406 Level 4 WU Building City Campus
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

19 April 2016

Jane Koziol-McLain
Faculty of Health and Environmental Sciences

Dear Jane

Re: Ethics Application: 16/65 What is the relationship between engagement, charge nurse manager leadership, the leadership relationship, practice environment and patient outcomes?

Thank you for your request for approval of an amendment to your ethics application.

I have approved the minor amendment to your ethics application allowing changes to the survey instrument and the Information Sheet.

I remind you that as part of the ethics approval process, you are required to submit the following to the Auckland University of Technology Ethics Committee (AUTEC):

- A brief annual progress report using form EA2, which is available online through http://www.aut.ac.nz/researchethics. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 13 April 2019;

- A brief report on the status of the project using form EA3, which is available online through http://www.aut.ac.nz/researchethics. This report is to be submitted either when the approval expires on 13 April 2019 or on completion of the project.

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to obtain this. If your research is undertaken within a jurisdiction outside New Zealand, you will need to make the arrangements necessary to meet the legal and ethical requirements that apply there.

To enable us to provide you with efficient service, please use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

All the very best with your research,

Kate O'Connor
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: Jenny Parr jennyparr@me.com

Appendix N: Local Approval

WDHB Approval of Audit/Obs Research

Waitemata
District Health Board

Best Care for Everyone

RM13300   **Leadership and engagement of nurses and their teams and the impact on patient outcomes**

WDHB Contact: Jenny Parr

Department: Director Nursing & Midwifery   **Title Abbreviation:**

Project Type: Observational research   **External Reference:**

Duration: 1/05/2016 - 31/07/2016

Description: What is the relationship between engagement, charge nurse manager leadership, the leadership relationship, practice environment and patient outcomes?

This study is a cross sectional survey at an urban DHB from a population of 907 nursing and clerical staff contributing to unit level quality outcomes in 23 medical/surgical inpatient wards, and unit level institutional nurse sensitive outcome data. Structural equation modelling has been chosen to analyse the data at unit level because it is the most complete quantitative method for testing theories and is a deductive approach to multivariate analysis.

Locality Review

The undersigned agree to the following:

- The study protocol and methodology has merit.
- The local lead investigator is suitably qualified, experienced, registered and indemnified.
- Resources, facilities & staff are available to conduct this study, including access to interpreters if requested.
- Cultural consultations have occurred or will be undertaken as appropriate.
- Appropriate confidentiality provisions have been planned for.
- Conducting this study will have no adverse effect on the provision of publicly funded healthcare.
- There is a stated intent that the results of this study will be disseminated and where practical and appropriate the findings of the study will be translated into evidence based care.

Awhina Research & Knowledge has reviewed this study. According to the documentation submitted at registration this study does not require Health & Disability Ethics Committee review. Enquires to research@waitematadhb.govt.nz

Dept/Org	Role	Name (Print Clearly)	Signature	Date
Director Nursing & Midwifery	Head of Division	Jocelyn Peach (approved already via email)		27 / 01 / 16
Surgical & Ambulatory Services	Head of Division	Kate Gilmour		26 / 01 / 16
Medicine and HOP Service	Head of Division	Shirley Ross		27 / 01 / 16
Workforce Development	Manager	Sarah Mcleod		26 / 01 / 16

Please return completed form to Awhina Research & Knowledge Centre
Alternatively, emails received from approvers are acceptable as electronic sign-off.

Appendix O: Maori Review Approval

30 January 2016

Tēnā koe Jenny

√ Your application has been approved

Thank you for including me in the consultation around the development of your doctoral thesis. I note you took on board the recommendation to discuss your study with Dr Denise Wilson at the Auckland University of Technology. I also note you have met and taken on board recommendations made by the workforce development manager and operations Manager – Maori provider arm of the Waitemata DHB, which were to include a section in the thesis about Maori experiences and also to present the findings at a hui.

I wish you well with your study

- Please add Maori cultural contact details to the information form

Ngā mihi nui,

Dr Helen Wihongi I Research Advisor – Māori
He Kamaka Waiora I Waitemata and Auckland DHB
Level 2, 15 Shea Terrace, Auckland 0740, New Zealand
Private Bag: 93-503
p: +64 9 486 8920 ext. 3204 m: 02102031167

Appendix P: Exploratory Factor Analysis of Marker Variables

 Bureaucracy scale.

Data were subjected to factor analysis using principal component analysis and oblimin rotation.

All KMO values for the individual items were above .5 and the KMO measure was .677

indicating the data were sufficient for exploratory factor analysis. The Bartlett's test of sphericity

(χ^2 (3) = 226.639, p < .001) was significant. Using an Eigenvalue cut-off of 1.0, there was one

factor that explained a cumulative variance of 70.08%. The scree plot confirmed this finding.

Finally the communalities were well above .3 confirming each item shared some common

variance with other items. Table 37 shows the factor loadings and communalities.

Table 37. Factor loadings and communalities for the Bureaucracy scale

	Bureaucracy	Communalities
1. Our work is highly regulated by bureaucratic procedures	0.828	0.686
2. There are a lot of rules and regulations in this organisation	0.882	0.778
3. Decisions must go through many layers of management before they are finalised	0.799	0.639
Eigenvalues	2.102	
% of variance	70.08	

 A composite scale was imputed based on the mean of the items. Descriptive statistics

are presented in Table 38. The skewness and kurtosis were well within a tolerable range for

assuming a normal distribution and examination of the histograms suggested that the

distributions looked approximately normal (see Figure 27, p. 196).

Table 38. Descriptive statistics for the Bureaucracy scale

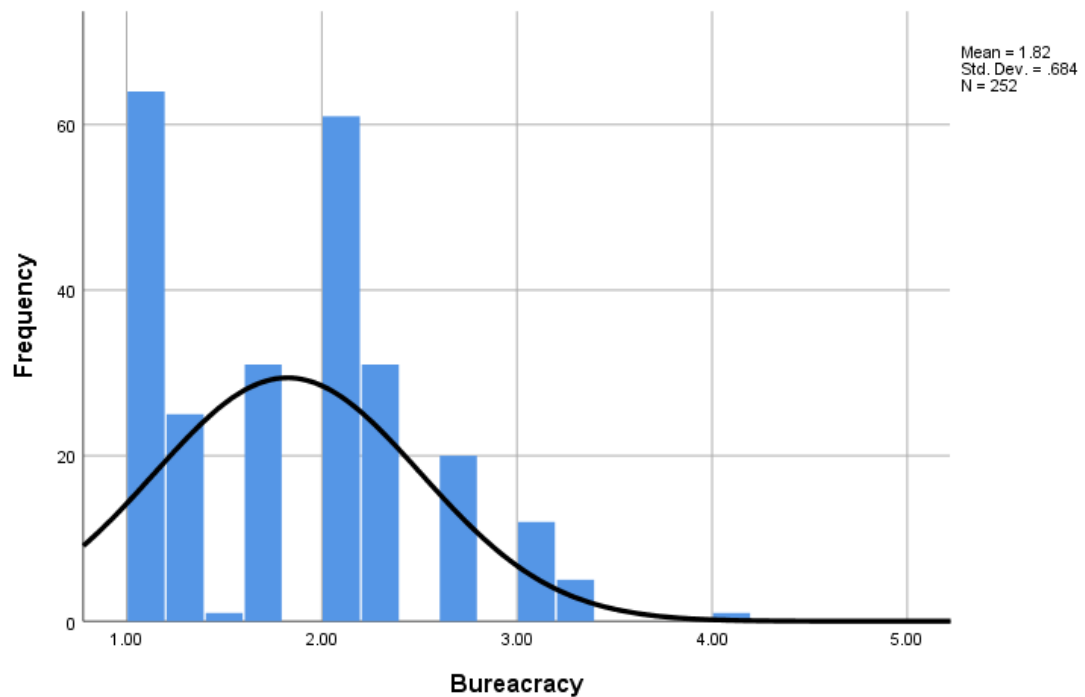|	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Bureaucracy	3	1.83 (.684)	.708	1.001	.777

N = 252

Figure 27. Histogram and normal distribution of Bureaucracy scale

Willingness to try new food products; DSI scale

Data were subjected to factor analysis using principal component analysis and oblimin rotation.
All KMO values for the individual items were above .5 and the KMO measure was .897
indicating the data were sufficient for exploratory factor analysis. The Bartlett's test of sphericity
(χ^2 (15) = 1314.081, p < .001) was significant. Using an Eigenvalue cut-off of 1.0, there was one
factor that explained a cumulative variance of 75.91%. The scree plot confirmed this finding.
Finally the communalities were well above .3 confirming each item shared some common
variance with other items. Table 39 (p. 197) shows the factor loadings and communalities.

Table 39. Factor loadings and communalities for the Willingness to try new food products; DSI scale

	Innovative Food	Communalities
1. I buy new, different or innovative foods before anyone else I know	0.889	0.790
2. Generally I am amongst the first of my circle of friends to buy new, different or innovative foods	0.909	0.825
3. Compared to my friends, I purchase more new, different or innovative foods	0.918	0.843
4. If new, different or innovative foods are available in shops and supermarkets I always purchase them	0.831	0.690
5. Generally I am the first amongst my friends to remember a brand of new, different or innovate foods	0.879	0.773
6. I do purchase new, different or innovative foods even if I have not tasted/experienced them beforehand	0.795	0.632
Eigenvalues	4.554	
% of variance	75.91	

A composite scale was imputed for the factor based on the mean of the items.

Descriptive statistics are presented in Table 40. The skewness and kurtosis were well within a

tolerable range for assuming a normal distribution and examination of the histograms suggested

that the distributions looked approximately normal (see Figure 28, p.198).

Table 40. Descriptive statistics for the Willingness to try new food products; DSI scale

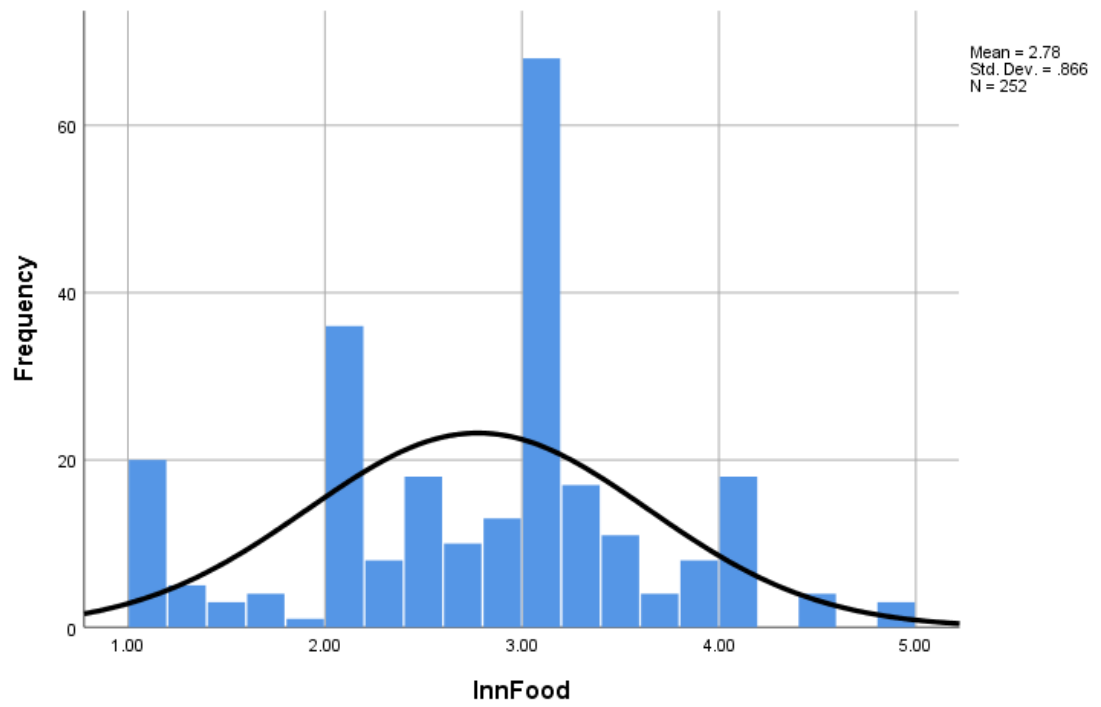|	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Innovative Food	6	2.777 (.866)	-.200	-.127	.936

N = 252

Figure 28. Histogram and normal distribution of Willingness to try new food products; DSI scale

Appendix Q: Exploratory Factor Analysis of Institutional Data

       Independent Variables. Data for falls, pressure injuries and complaints were reverse scored in order that all items were going in the same direction e.g. high was good. All items were standardised and subjected to factor analysis using principal component analysis and varimax rotation. All KMO values for the individual items were above .5 and the KMO measure was .602 indicating the data were sufficient for exploratory factor analysis. The Bartlett's test of sphericity (χ2 (10) = 306.131, p < .001) was significant. Using an Eigenvalue cut-off of 1.0, there were two factors which explained a cumulative variance of 69.5%%. The scree plot confirmed this finding. Finally the communalities were well above .3 confirming each item shared some common variance with other items. Table 41 shows the factor loadings and communalities.

Table 41. Factor loadings and communalities for the institutional data scales

	1	2	Communailities
Zscore: RFall_Jun16Jul16	.938		.820
Zscore: Ov_Rev3	.787		.677
Zscore: FFT_Jun15Jul16	.626		.426
Zscore: RPI_Jun16Jul16		.928	.818
Zscore: RComp_Jun16Jul16		.797	.736
Eigenvalues	2.289	1.187	
% of variance	69.515		

       A composite score was created for the factors, based on the mean of the items, which had their primary loadings on each factor. Descriptive statistics are presented in Table 42 (p. 200). The skewness and kurtosis were well within a tolerable range for assuming a normal distribution and examination of the histograms suggested that the distributions looked approximately normal (see Figures 29 and 30, p. 200).

Table 42. Descriptive statistics for the Institutional data

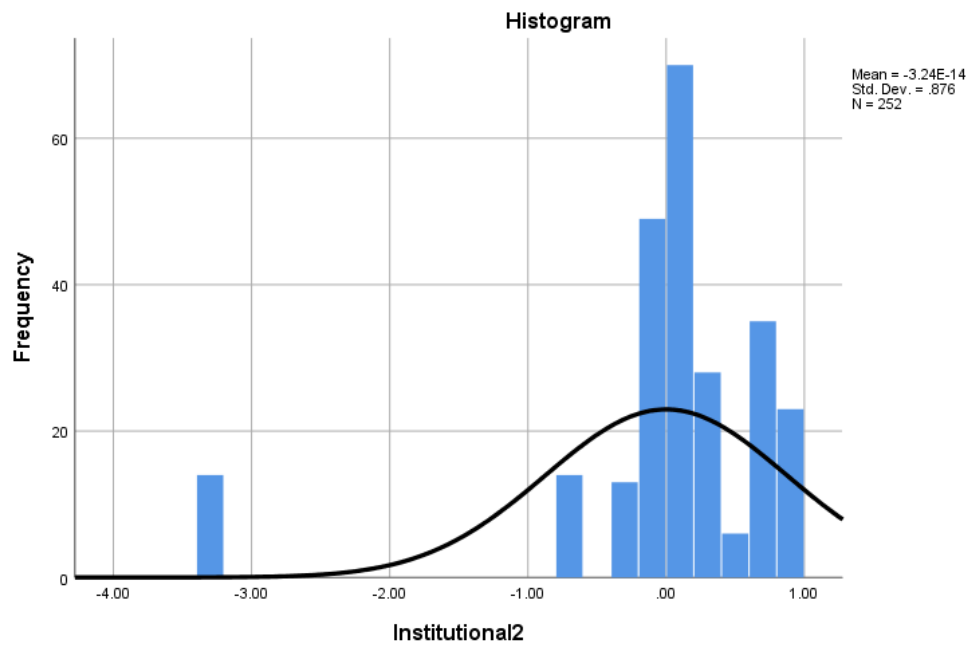|	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Institutional 1	3	.000 (.792)	-256	.407	.702
Institutional 2	2	.000 (.876)	-2.68	7.63	.696

N = 252

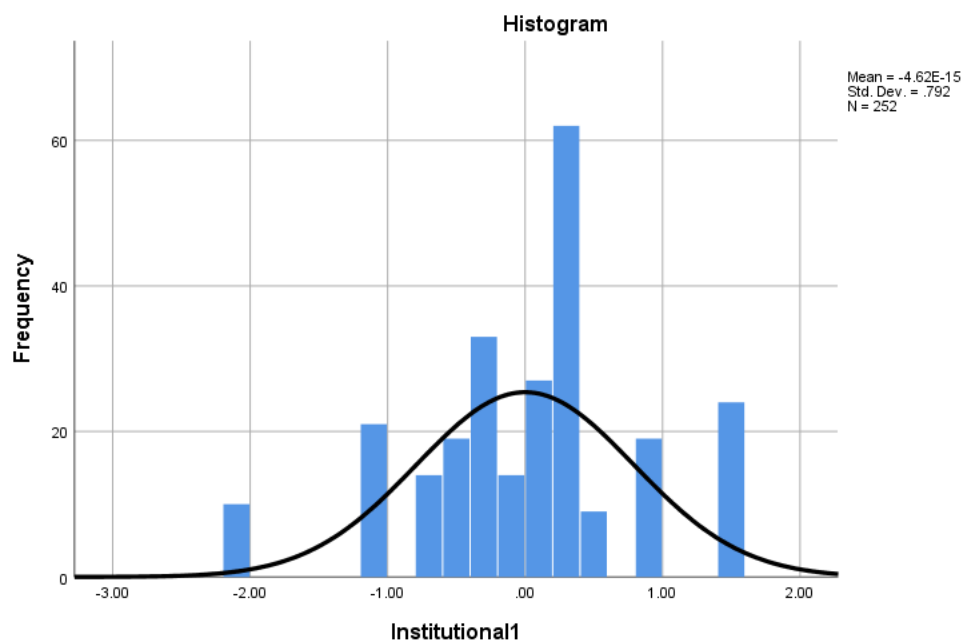*Figure 29.* Histogram demonstrating normal distribution of Institutional1

Figure 30. Histogram demonstrating normal distribution of Institutional2

The factors were subjected to confirmatory factor analysis and were not found to fit the data. Various modifications were made, however this did not result in a factor structure which could be confirmed.

Each of the items was treated as a single item in the structural equation modeling.

Appendix R: One Factor Congeneric Models
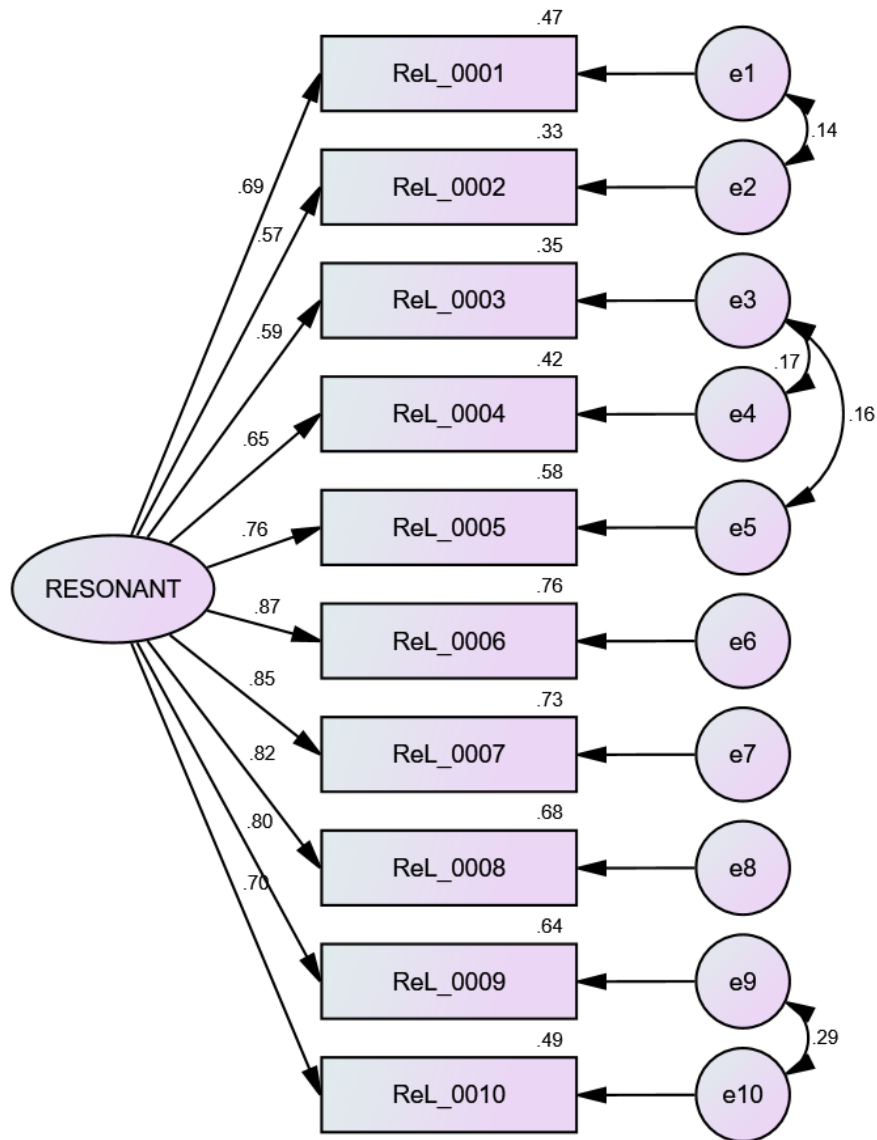
Resonant Leadership
One factor congeneric model
Principal components analysis
α .92
Chi-square (31,N=252) = 49.342, p<.001, TLI =.98, CFI =.99,
CMIN/DF =1.592, RMSEA = .049, SRMR = .0315

Figure 31. One factor congeneric model for the Resonant Leadership scale
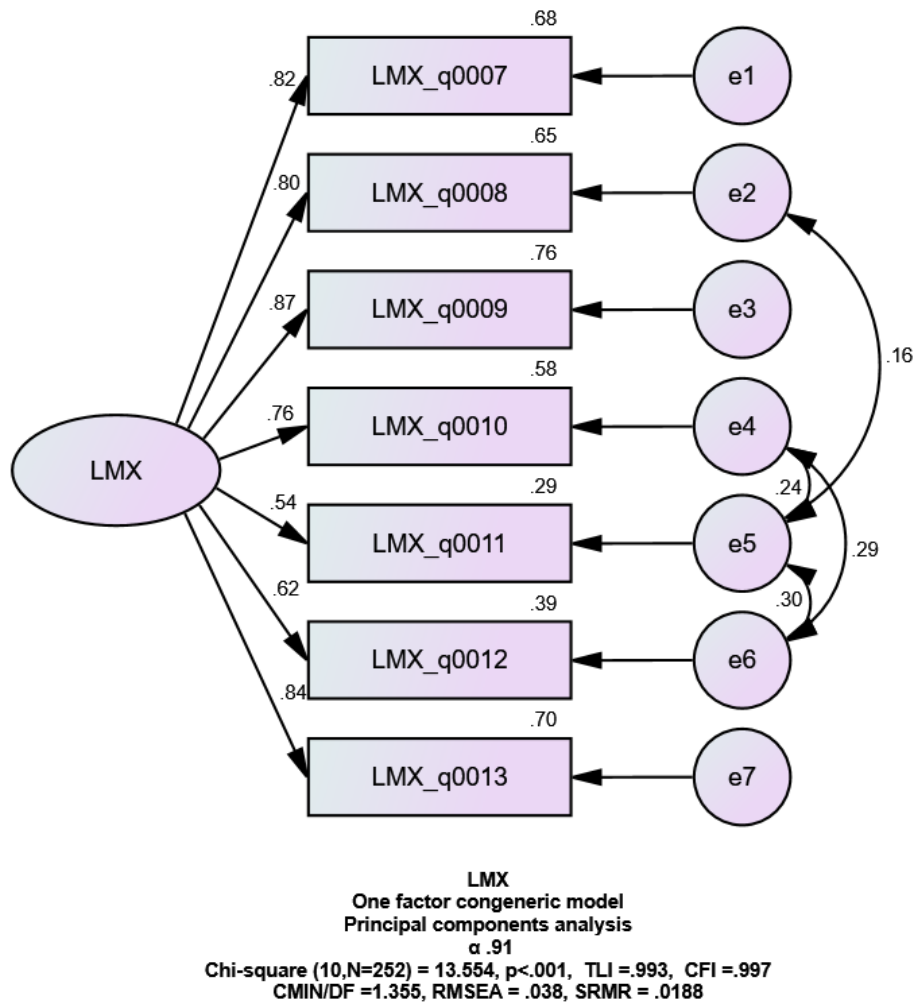
Figure 32. One factor congeneric model for the Leader-member Exchange scale
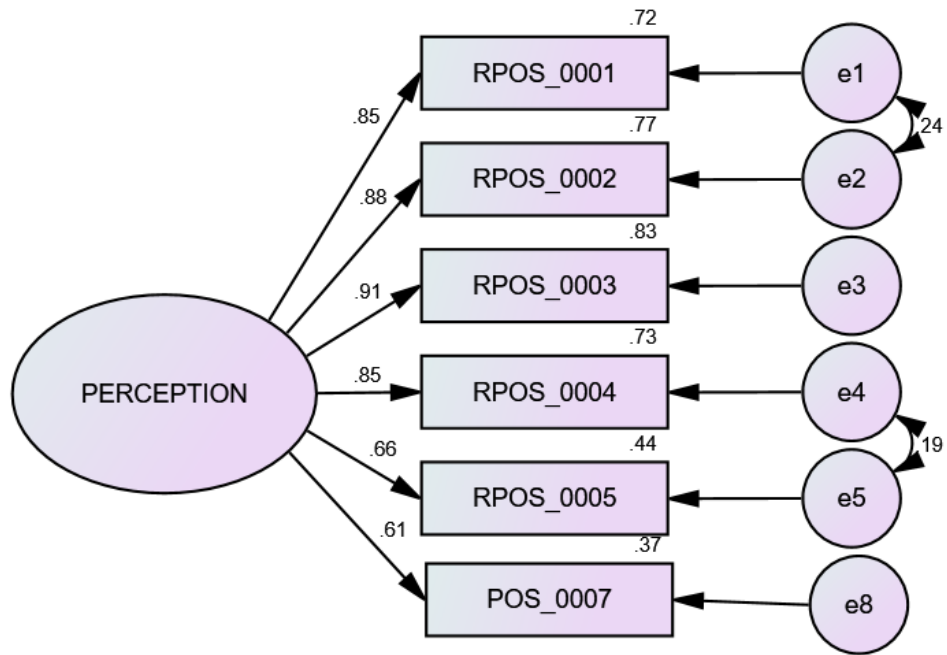
Figure 33. One factor congeneric model for the Perception of Organisational Support scale
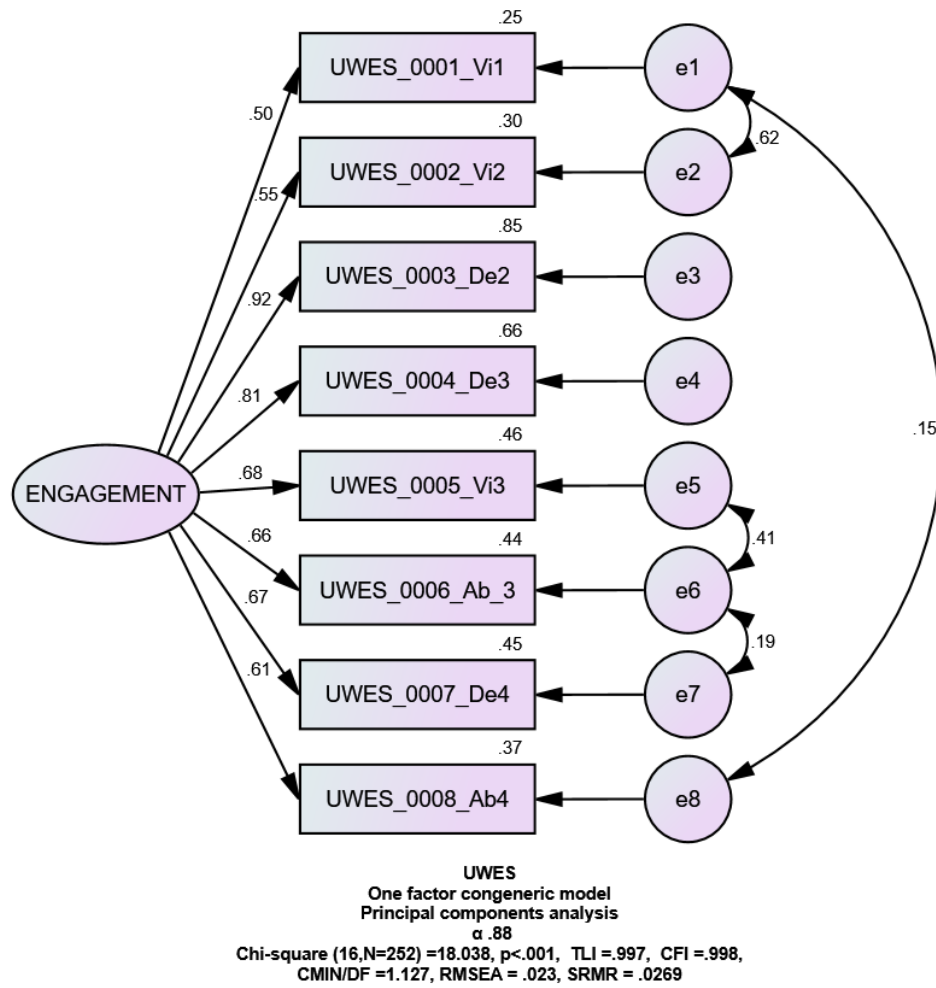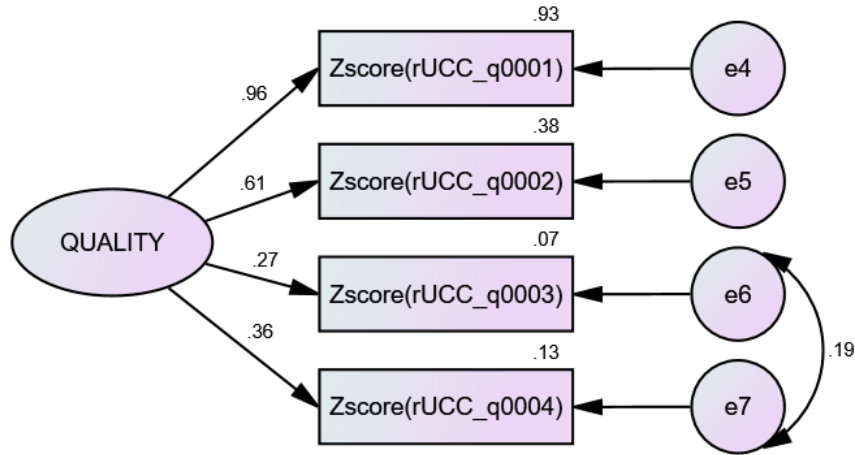
Utrecht Work Engagement Scale

Figure 34. One factor congeneric model for the Utrecht Work Engagement Scale
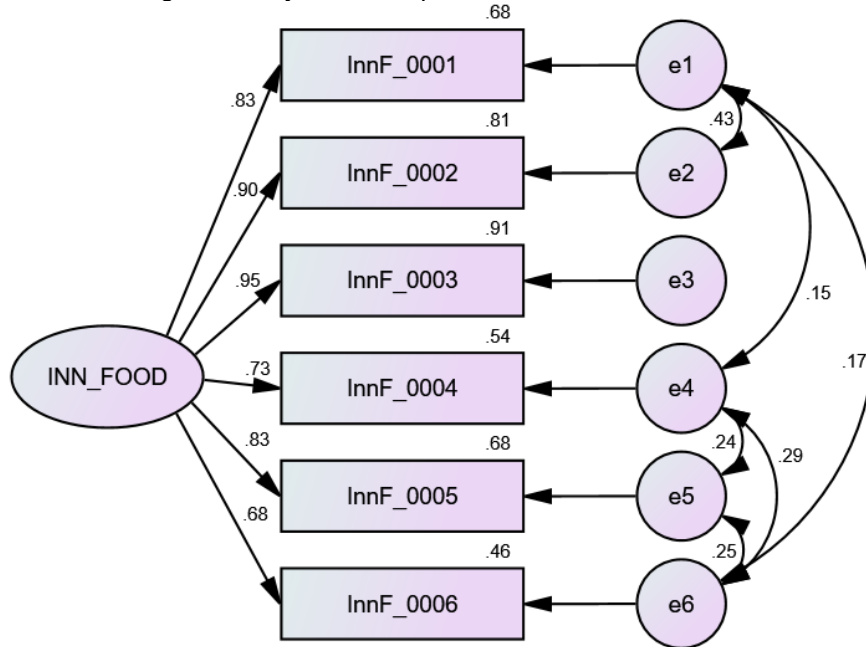
Unit Care Quality

Quality of Care
One factor congeneric model
Principal components analysis
α .64
Chi-square (1,N=252) = .352, p<.001, TLI =1.024, CFI =1.000,
CMIN/DF =.352, RMSEA = .000, SRMR = .0079

Figure 35. One factor congeneric model for the Unit Care Quality scale

Willingness to try new food products; DSI scale

Innovative Food
One factor congeneric model
Principal components analysis
α .94
Chi-square (3,N=252) =1.076, p<.001, TLI =1.007, CFI =1.000,
CMIN/DF =.359, RMSEA = .000, SRMR = .0039

Figure 36. One factor congeneric model for the Willingness to Try New Foods scale

Appendix S: Confirmatory Factor Analysis

Willingness to try new food products; DSI scale

The Willingness to try new food products; DSI scale could have been improved by removing InnF-006 and InnF-005; however RMSEA could not be calculated. The six-item one factor congeneric model was taken forward for the common-method variance test.

Construct validity

Significant covariances (e1-2, e3-4, e3-5, e9-10, e11-13, e14-16, e14-15, e15-16, e18-19, e21-22, e26-27, e30-31) were removed. To resolve the discriminant validity issue between Resonant Leadership and LMX, an exploratory factor analysis was undertaken between these two scales. Two items were cross loading on more than one factor and these were individually removed. Prior to removal each item was reviewed to ensure that the meaning remained in other items.

- ReL 9 "The leader in my programme or unit engages me in working toward a shared vision".

- LMX 12 "I have enough confidence in my leader that I would defend and justify his or her decision if he or she were not present to do so".

To improve the average variance extracted (AVE) of resonant leadership one item was removed:

- Rel 10 "The leader in my programme or unit allows me the freedom to make important decisions in my work".

To resolve convergent validity issues, one item was removed:

- UWES 1 "at my work I feel bursting with energy"

An adequate model for LEON was obtained which demonstrated both discriminant and convergent validity using (Gaskin & Lim, 2016a) However the modification indices indicated further cross loading. As a result, 10 further items were removed.

- Rel 4 "The leader in my programme or unit supports teamwork to achieve goals and outcomes"

- UWES 6 "I feel happy when I am working"

- UWES 7 "I am proud of the work that I do"

- LMX 13 "How would you characterize your working relationship with your leader?"

- LMX 10 "Regardless of how much formal authority your leader has built into his or her position, what are the chances that your leader would use his or her power to solve problems in your work?"

- POS 5 "My organization would forgive an honest mistake on my part".

- Rel 5 "The leader in my programme or unit calmly handles stressful situations".

- UWES 2 "At my job I feel strong and vigorous".

- LMX 7 "Do you know where you stand with your leader and do you know how satisfied your leader is with what you do?"

- Rel 2 "The leader in my program or unit acts on values even if it is at a personal cost".