Testing the Nursing Worklife Model in Canada and Australia: A Multi-group Comparison Study

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Abstract

Study Aim: To test a model derived from the Nursing Worklife Model linking elements of supportive practice environments to nurses' turnover intentions and behaviours in Canada and Australia.

Background: With the worldwide shortage of nurses, retaining nurses within fiscally challenged health care systems is critical to sustaining the future of the nursing workforce and ultimately safe patient care. The Nursing Worklife Model describes a pattern of relationships amongst environmental factors that support nursing practice and link to nurse turnover. This model has been tested in North American settings but not in other countries.

Methods: A secondary analysis of data collected in two cross-sectional studies in Canadian and Australian hospitals (n=4816) was conducted to test our theoretical model. Multigroup structural equation modelling techniques were used to determine the validity of our model in both countries and to identify differences between countries.

Results: The hypothesized model relationships were supported in both countries with few differences between groups. Components of supportive professional practice work environments, particularly resources, were significantly linked to nurses' turnover intentions and active search for new jobs. Leadership played a critical role in shaping the pattern of relationships to other components of supportive practice environments and ultimately turnover behaviours.

Conclusion: The Nursing Worklife Model was shown to be valid in both countries, suggesting that management efforts to ensure that features of supportive practice environments are in place to promote the retention of valuable nursing resources.

Keywords

Leadership, Nursing Workforce, Nursing Worklife Model, Path Modelling, Practice Environment

What is already known about the topic?

- Magnet Hospital professional practice environment features influence the quality of nurses' worklife and subsequent nurse and patient outcomes.

What this paper adds?

- Cross-cultural confirmation of the pattern of relationships among Magnet Hospital practice environment domains described in the Nursing Worklife Model and their relationship to turnover behaviours.

- Cross-country validation and extension of the Nursing Worklife Model to nurse turnover intentions and behaviours.

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TESTING THE NURSING WORKLIFE MODEL IN CANADA AND AUSTRALIA: A MULTI-GROUP COMPARISON STUDY

Introduction

The work environment of nurses has long been a major concern in the nursing profession (Aiken et al., 2001, Clarke et al., 2001, Laschinger and Leiter, 2006). Management practices, organisational culture and work design within hospitals shape nursing practice environments, which have an impact on nurse, system, and patient outcomes (Aiken et al., 2001, Aiken et al., 2012, Institute of Medicine, 2004). Work environment factors have an impact on nurses' perceptions of quality care (Gormley, 2011) and importantly, nurse perceived quality of care is associated with job satisfaction (Aiken et al., 2002) and turnover intentions (Gormley, 2011). Magnet Hospitals, characterised by working environments that support professional nursing practice and thus attract and retain nurses (McClure et al., 1983), have been consistently linked to higher ratings of patient care quality and nurse workplace wellbeing (Faller et al., 2011, Schmalenberg and Kramer, 2008). A large body of work has demonstrated the importance of worklife features characteristic of Magnet Hospitals to a variety of nurse and patient outcomes in numerous countries around the world (Aiken et al., 2001, Clarke et al., 2001, Laschinger and Leiter, 2006).

While this research has linked these Magnet Hospital characteristics to a variety of outcomes, few have examined how these characteristics interact with each other to provide an explanation of their effects on nurse and patient outcomes. The Nursing Worklife Model (NWM) was proposed by Leiter and Laschinger (2006) to suggest a pattern of relationship among the various worklife domains that more fully explicates how nursing management can create work environments that support professional nursing practice and ensure high quality of patient care. Encouraging empirical support for this model has been demonstrated in North American settings, but to our knowledge, the model has not been tested in other countries. To examine the cross-cultural applicability of the model, we examined the extent to which the pattern of relationships of the NWM was consistent in Canadian and Australian nursing settings. This study extends previous work by examining the relationship to of the core worklife domains to turnover behaviours.

Theoretical Framework

Developed by Leiter and Laschinger (2006), the original Nursing Worklife Model described relationships among 5 domains of supportive professional practice environments identified in research on Magnet Hospitals (Lake, 2002, Lake and Friese, 2006). The five domains described by Lake (2002) are, 1) effective nursing leadership, 2) staff participation in organisational affairs, 3) adequate staffing for quality care, 4) support for a nursing (vs medical) model of patient care, and 5) effective nurse-physician relationships. Leiter and Laschinger (2006) argued that by specifying logical patterns of relations among the work environment domains, a greater understanding of the mechanisms by which they influence each other is possible, thereby identifying potential points of interventions to improve nursing worklife. The model has been subsequently expanded to include patient outcomes and other nurse outcomes (Laschinger & Leiter, 2006).

The theorized pattern of relationships among Lake's five domains of professional nursing work environments is illustrated in Figure 1. Leadership is the starting point, with direct paths to (or influence on) policy involvement, nurse/physician relationships and staffing/resource adequacy. Both policy involvement and nurse/physician relationships influence the extent to which a nursing model of care (in contrast to a medical model) is emphasized in the delivery of nursing care. Use of a nursing model of care enhances the influence of leadership on staffing/resource adequacy, which in turn, is related to outcomes. Leiter and Laschinger (2006) found support for these proposed interrelationships among the 5 worklife domains and their relationship to burnout in a large sample of Canadian nurses. Nursing leadership was found to be the driving force of the model, strongly influencing the other professional practice environment domains, which in turn influenced the degree of burnout. The leadership domain had the strongest total effects in the model, highlighting its' importance to creating supportive professional practice environments that mitigate negative nurse outcomes. This pattern of relationships was replicated in a cross-validation sample of the data. In follow-up analysis where Laschinger and Leiter (2006) expanded the model by linking professional practice domains to nurse-assessed adverse events. They found that burnout played a mediating role in this relationship. The results suggest that qualities of the work environment influence adverse events to the extent that they contribute to feelings of exhaustion, depersonalization, and personal accomplishment. Manojlovich and Laschinger (2007) extended the model in the US to demonstrate the role of structural empowerment in promoting supportive professional practice environments and subsequent outcomes, in this case nurses' job satisfaction. In that study, nurses who reported higher levels of structural empowerment were more likely to report better leadership on their units and subsequently greater access to other domains of supportive professional practice. Further the theorized pattern of relationships among Lake's five factors was supported, providing empirical

support for the Nursing Worklife Model. Laschinger (2008) replicated this pattern of relationships in a model whereby the worklife domains mediated the relationship between empowerment and nurses' perceptions of patient care quality and work satisfaction. More recently, Ballard, Bott & Boyle (2013) validated the model using unit level data from a larger study of nurses in 34 Magnet Hospitals in the US. Again, nursing leadership played a prominent role in predicting other worklife domains and subsequently work satisfaction. This study adds to our knowledge of the importance of work unit contextual effects on nurses' worklife responses. These findings are important because nurse leaders play a prominent role in shaping work environments.

Support for Links in the Nursing Worklife Model

Various studies establish the critical role of nurse leadership and management in ensuring positive nurse and patient outcomes (Aiken et al., 2008, Laschinger and Leiter, 2006). In Australia, Duffield, Roche and colleagues (2011) found that nursing unit managers with good leadership skills were instrumental in increasing job satisfaction among nurses and satisfaction with nursing. Systematic reviews of the literature have linked relational leadership style with supportive workplace environments, which influence staff retention (Cowden et al., 2011). Similarly, Wong, Cummings and Ducharme (2013) found significant associations between nursing leadership (behaviours, styles of practices) and increased patient satisfaction, reduced adverse events, and lower mortality rates. They recommended the testing of models that explore the relationship between leadership, the practice environment and outcomes (Wong et al., 2013).

Nurse involvement in workplace decision-making has been identified as positively influencing better outcomes. Lower patient mortality, a higher nurse perceived quality of care, lower levels of burnout (Jaafarpour and Khani, 2011) and a greater sense of personal accomplishment at work (Van Bogaert et al., 2009) have been associated with nurse's involvement in organisational affairs. Evidence also suggests that nurse participation in formal work structures impacts positively on perceived empowerment (McDonald et al., 2010) and on the commitment of nurses to relate therapeutically with patients (Roche et al., 2011). In addition, Porter and colleagues (2010) found that interventions involving collaboration between clinical and management staff promoted better nurse outcomes.

Adequate staffing is crucial for ensuring positive nurse and patient outcomes (Aiken et al., 2002, Laschinger and Leiter, 2006, Needleman et al., 2002). Nurse staffing has been linked with nurse burnout (Laschinger and Leiter, 2006), nurses' turnover intention (Friese and Himes-Ferris, 2013, Gabriel et al., 2013), adverse patient outcomes (Duffield et al., 2011, Roche et al., 2012) and patient mortality (Tourangeau et al., 2002). Studies have shown that nurses operating in practice environments with insufficient staffing levels experience a decrease in job satisfaction (Aiken et al., 2001, Gunnarsdóttir et al., 2009). Likewise Kalisch and colleagues (2010) found that higher

perceptions of adequate staffing and teamwork positively influenced satisfaction with current position and occupation. In seminal work Aiken and colleagues (2002) found that insufficient staffing levels affected how nurses assessed the quality of care.

In regard to key patient outcomes, an annotated review of major nursing and medical literature (1998-2008) demonstrated that decreased levels of staffing negatively impact on adverse outcomes for intensive care unit patients (Penoyer, 2010). In the US Aiken and colleagues (2011) found that lowering patient-to-nurse ratios only improves patient outcomes in hospitals with good work environments. Similarly, improved work environments, as well as better patient-to-nurses ratios, have been associated with patient satisfaction and improved quality of care (Aiken et al., 2012).

Practice environments that incorporate a nursing (vs medical) foundation for quality care, support for nurses to undertake education, and preceptors for new staff, influence nurse and patient outcomes. North American studies have linked a nursing foundation for quality care with a variety of outcomes, including patient mortality, failure to rescue and burnout (Aiken et al., 2008, Armstrong et al., 2009). Giallonardo and colleagues (2010) found that preceptors who engaged new graduates in an acute care setting through authentic leadership positively influenced job satisfaction among this cohort. A recent study by Lansiquot et al (2012) found that foundations for quality care was a significant predictor of turnover intent, although they also found no significant relationships between turnover intent and the other four components of the Nursing Worklife model.

Effective nurse-doctor relationships have also been shown to positively influence outcomes for nurses and patients (Aiken et al., 2008). Importantly, nurse-physician relationships, as well as resource adequacy and nurse management ability, have been linked with nurse perceived quality of care (McCusker et al., 2004). Effective nurse-physician communication may lead to small but significant decreases in medication errors (Manojlovich and DeCicco, 2007) and increased patient satisfaction (Vahey et al., 2004).

Nurse Turnover

Substantial work has identified associations between aspects of the practice environment and turnover intention. A meta-analysis by Hayes et al. (2006) found leadership, development opportunities and workload were important factors, while an update identified the potential impact of generational factors and emphasized the role of the nurse manager in establishing a positive environment (Hayes et al., 2012). Similarly, an Italian study found that high quality nurse-supervisor and nurse-physician relationships promoted nurses' individual affective commitment, which was associated with nurses' turnover intentions (Galletta et al., 2012) and influenced intent to leave (Heinen et al., 2012). A large Dutch study identified a lack of career opportunities and a negative

work atmosphere as important predictors of turnover intent, concluding that leadership was a crucial factor in improving retention (Tummers et al., 2013). In Canada, nurse turnover was associated with ambiguous role responsibilities and unstable staffing (O'Brien-Pallas et al., 2010). Recently, North et al. (2013) found that turnover in New Zealand was exacerbated by staffing below budgeted levels and reliance on temporary cover to fill vacancies.

Evidence for the relationship between nurses' practice environment and turnover is well established, and links among the factors in the Nursing Worklife Model have been supported in many settings, including the two countries in the present study. However, although individual elements of the model have been linked to nurses' turnover intent, a test of the complete model to explicate the mechanisms through which turnover intention is influenced by components of the model has not been undertaken. Further, as noted above, the Nursing Worklife Model has been applied in the North American context in several studies but it has not been applied to Australian data. The aims of this study are therefore to:

1. Test a model derived from the Nursing Worklife Model (Laschinger and Leiter, 2006), linking elements of supportive practice environments to nurses' turnover intentions and behaviours in Canada and Australia
2. Examine consistency of model fit in Canadian and Australian nursing settings

Method

This study was undertaken using a model testing design, where the proposed model was examined using cross-sectional data. Data were collected using a nurse survey that included the *Practice Environment Scale* (Lake, 2002), demographic items and employment characteristics. The model was examined using a structural equation modelling approach.

Settings

This paper reports the analysis of data collected in two studies of nursing units (wards) in Canadian and Australian hospitals. Data from a recently completed Australian project were combined with that from previously reported Canadian research (Laschinger et al., 2011). In the Australian study, data were collected on 62 randomly selected medical, surgical and rehabilitation nursing units in 11 public general acute hospitals across three Australian states (New South Wales, Western Australia and the Australian Capital Territory) between 2008 and 2010. Emergency departments, intensive care units, psychiatric, pediatric and obstetric wards were excluded. Ethics approval was obtained from participating health services, state Health Departments and the University (7 committees in total). All nurses on the selected wards were asked to complete a survey anonymously and return via

reply–paid post or a secure data collection box. An overall response rate of 44.4% was achieved (1673 of 3767 potential consenting respondents) with 1655 complete surveys included in the present study.

In the Canadian study across 217 units in 19 hospitals in Ontario, a broader sample of units was included (mental health, maternal and child, and critical care). Although there were very small differences in practice environment variables between the ward types, these were of a smaller magnitude than the variation regardless of specialty. All ward types were therefore retained in the data. Data collection procedures in both studies were similar (hospital mail survey and responses retuned to university research lab in sealed envelopes), with a comparable response rate of 40% (n=3156). Ethical approval was obtained from the University of Western Ontario ethics review board, which was deemed acceptable for participating hospitals.

Sample

The literature suggests no single technique for calculating sample size when using structural equation modelling. A commonly cited 'rule of thumb' is a minimum of sample size of 200, or 10 times the number of parameters to be estimated (Kline, 2005). In the model examined here, with an overall sample of 4811 and a minimum of 1655 for one of the groups, this requirement was comfortably met.

Instruments

The nurse survey varied slightly across the countries and only the shared elements are reported here (Table 1). Demographic and employment variables included *Age* and *Experience*, *Gender* and *Employment Status*. The Practice Environment Scale is a widely used 31-item instrument (Warshawsky and Havens, 2011) that measures five domains of the nursing practice environment: *Nurse manager leadership and support; Participation in hospital affairs*; *Collegial nurse-doctor relationships; Foundations for quality of care;* and *Staffing and resource adequacy* (Lake, 2002). Higher domain scores indicate the stronger presence of that factor. The outcomes *Plan to Leave Present Nursing Job* and *Actively Looking for Another Nursing Job* were collected using a 7-step ordinal scale (*strongly disagree* to *strongly agree*) in the Canadian study and a binary response (no/yes) in the Australian study.

Analysis

Data were initially analysed using SPSS version 21 (IBM, 2012). Missing data were less than 5% for most items and appeared to have no systematic bias. These data were excluded from analyses on a listwise basis. Respondents were identified by their country for comparisons. The items *Plan to Leave Present Nursing Job* and *Actively Looking for Another Nursing Job* were converted into

dichotomous variables for analysis: responses of *agree* were recoded to *yes* and *disagree* or *neutral* responses recoded to *no*. Descriptive statistics included an assessment of the differences between groups on demographic, employment and outcome characteristics using the t-test or χ^2.

The model presented in Figure 1 was tested using structural equation modelling in Mplus 7.11 (Muthén and Muthén, 2012). In this model, a weighted least squares (WLSMV) estimator was used to accommodate both continuous and categorical outcome variables. Estimation using WLSMV approach handles missing data with less bias than listwise deletion and can handle data with moderate skewness (Asparouhov and Muthén, 2010). The nested nature of the data (people nested within units) was accounted for using the TYPE = COMPLEX command with unit as the cluster variable. Item parcelling using the item-to-construct balance technique (Little et al., 2002) was used to create 3 indicators each for the following latent variables: Leadership, Participation, and Foundations. Resources (4-items) and Collegial Relationships (3-items) used the original questionnaire items as indicators, as there were too few items to parcel. Intent to leave and Actively Looking were entered in as dichotomous manifest variables. To account for the different variable types, paths between latent variables use linear regression, while paths to dichotomous outcomes use probit regression. A comparative fit index (CFI) and Tucker-Lewis Index (TLI) around .95 and a root-mean-square error of approximation (RMSEA) around 0.05, were used as criteria to suggest a well-fitting model (Kline, 2005). Finally, to assess group differences in the magnitude of paths between Canadian and Australian samples, a multigroup analysis was performed on the structural model. Specifically, a model with all paths constrained to be equal across countries (the constrained model) was compared to a model with all paths freely estimated (the free model). If the ΔCFI > .01 in favour of the free model, then cultural differences in the magnitude of the paths exist; otherwise, the constrained model was preferred (Cheung and Rensvold, 2002). Reliability was assessed using three criteria: Composite reliability (p_c, a measure of internal consistency that permits different measurement scales, degrees of precision and error; Graham, 2006), Cronbach's alpha (α) above 0.7 (Tenenhaus et al., 2005), and average variance explained (AVE) above 0.5 (Fornell and Larcker, 1981).

Results

As noted above, response rates in the Australian and Canadian studies were 44.4% and 40% respectively, providing a total of 4811 completed surveys (an overall response of 41.3%). Respondents in both countries were mainly female although with a greater proportion of males in the Australian sites (Table 2). Most nurses were employed full-time with the Canadian group including fewer part-time and casual staff. Canadian nurses were also older with correspondingly

greater experience than their Australian counterparts. A greater proportion of Australian nurses had bachelor degrees; to be expected as this has been the basic registered nurse qualification since 1985. In regard to the outcome variables approximately one-fifth of Australian nurses planned to leave their present position while one-third of those in Canada intended to do the same. An even greater contrast was seen in regard to nurses contemplating a new nursing position, with double the percentage of Canadian nurses actively looking. The means for all subscales of the PES were significantly higher in the Australian data with relatively large differences noted in leadership and participation scores (Table 3). Data for all subscales displayed a mild negative skew for both groups. Internal consistency figures met criteria with Cronbach's alpha and composite reliability scores above 0.7 for both samples, and average variance explained acceptable (>0.5) for all domains.

Measurement Model

First, a measurement model was assessed to confirm the factor structure of latent variables in the model before proceeding to the structural model. The model with all factor loadings freely estimated across countries fit the adequately, with some room for improvement: χ^2 = (240*, N =* 4807) = 1322.84, $p < .001$, CFI = .93; TLI = .91; RMSEA = .04, 95% CI RMSEA [.041, .046]. Standardized factor loadings in the free model were all substantial and statistically significant, ranging from .66 to .86 across both countries. A second measurement model was run constraining the unstandardized factor loadings and intercepts constrained to equality across countries (i.e., strong invariance; Wu et al., 2007). This model fit the data well, χ^2 = (306*, N* = 4807) = 757.26, $p < .001$, CFI = .97; TLI = .96; RMSEA = .03, 95% CI RMSEA [.027, .032]. The ΔCFI was .039 in favour of the constrained model. Thus, when moving forward to test the structural model, factor loadings and intercepts were constrained to equality across cultures. In sum, the factor structure of the Practice Environment Scale was consistent with prior theory, and supported moving forward with the structural model.

Structural Model

Next, the hypothesized structural model was tested. First a model was run with all structural paths (see Figure 1) allowed to freely vary across countries. This model fits the data well, χ^2 = (272*, N =* 4807) = 929.61, $p < .001$, CFI = .96; TLI = .95; RMSEA = .03, 95% CI RMSEA [.029, .034], and all structural paths were significant at $p < .001$. A second model constrained all structural paths to equality across countries. This model also fit the data well, χ^2 = (281*, N* = 4807) = 856.41, $p < .001$, CFI = .96; TLI = .96; RMSEA = .03, 95% CI RMSEA [.029, .031]. The ΔCFI was .006 in favour of the constrained model. Since both models fit the data equally well, we preferred the more parsimonious constrained model. Thus, we concluded that there were no differences in the magnitude of paths between Australian and Canadian samples, and retain the constrained model with factor loadings, intercepts, and structural paths constrained to equality across groups.

The path coefficients and R^2 values (or pseudo-R^2 values for categorical outcomes) are presented in Figure 2. In summary, the proposed model received substantial support and did not differ substantially across the Australian and Canadian samples; the more positive the practice environment the less likely their intent to leave or look for a new job.

Discussion

The results of this study provide further support for the Nursing Worklife Model in two different countries, suggesting that the model, originally developed in North America, appears to generalize to nursing settings elsewhere. The pattern of relationships among the core magnet hospital components of the model was similar across countries with no meaningful differences in the strength of the relationships among these components. Our results are consistent with previous research in Canada and the United States (Laschinger and Leiter, 2006, Leiter and Laschinger, 2006, Manojlovich and Laschinger, 2007), and extend the model by linking elements of professional practice environments to nurse turnover behaviours and intentions in Canada and Australia. The consistency of the pattern of relationships among the five domains of the practice environment for both groups of nurses suggests that nurses in both countries have similar perceptions about what factors are required in their work environments to be able to provide quality patient care. In two large international studies, in North America, Britain, and Germany (Aiken et al., 2001) and more recently in Europe (Aiken et al., 2012) nurses reported similarities in work environment characteristics that support professional nursing practice and predict important job-related outcomes, such as, job satisfaction and burnout. However, these studies did not examine how distinct elements of professional practice environments interacted to predict nurse and patient outcomes, limiting our ability to understand points of potential intervention to improve these outcomes.

Consistent with previous research testing the NWLM, leadership appeared to be the driving force for other model components, linking indirectly through the various elements of supportive practice environments to both turnover intentions and active job search by nurses in both countries. Nurses' perceptions of leadership on their units was significantly and directly associated with nurses' perceived participation in decision making, adequate staffing and resources, and the quality of nurse-physician relationships. The link between leadership and decisional involvement was by far the largest association in the model, which importantly was subsequently strongly related to the perceived use of a nursing based (vs medical) model of patient care and ultimately perceptions of resource adequacy to support patient care quality. The magnitude of these effects is remarkably similar to studies in the US and Canada. The results highlight the importance of leadership for

creating work environments that support professional nursing practice and promote retention of nurses and suggest that developing strong leadership skills is an important starting point for intervention. Ballard, et al's (2013) findings at the unit level of analysis suggest that unit leadership plays an important role in creating positive work environments that support professional practice.

The magnitude of the effect of resource adequacy (and its predictors) was stronger for turnover intentions than for the actively looking outcome, although these variables were very strongly related to each other. The effect of resource adequacy on active job search behaviour was mediated by thoughts of leaving. These effects most likely reflect nurses' frustrations with having inadequate resources to enable them to provide the kind of care they wish to deliver. Numerous studies have shown that a major source of job dissatisfaction and thoughts of leaving the job is a lack of resources to provide care according to professional standards of practice (Friese and Himes-Ferris, 2013, Irvine and Evans, 1995). In this study resource adequacy was directly influenced by leadership quality and the perception that a nursing foundation of care was emphasized on the unit, highlighting the importance of leaders in creating satisfying professional practice environments. Intent to leave in this study was strongly related to actively looking for another job, which according to Holtom, Mitchell, Lee, and Eberly (2008), usually results in lower productivity and increased absenteeism. Therefore our results suggest that nurse managers need to pay attention to workplace factors that support professional nursing practice and decrease nurses' desire to leave their jobs. The central role of nursing leadership in our results in relation to its' influence on other worklife factors that support professional nursing practice highlights the importance of nursing management in ensuring these conditions are in place.

Limitations

The cross-sectional nature of the study designs precludes strong statements of cause and effect; therefore our findings must be viewed with caution. The response rate in each study was less than 50%, which is consistent with similar survey responses (Baruch and Holtom, 2008), but does limit the generalizability of the findings. Unfortunately, because participation was voluntary, we could not compare participants to those who chose not to participate. Common method variance (CMV) is an issue when self-reports at a single point in time are used to collect data. However, Spector (2006) contends that the negative effects of CMV have been exaggerated and argues that psychometrically sound self-report measures are, in some cases, more accurate descriptions than more objective measures. Given the demonstrated reliability and validity of the measures used in this study, problems with CMV should be attenuated to some extent. It is also possible that other unmeasured factors in the participants' environment may have influenced nurses' turnover behaviours. However,

empirical support obtained in this study for the theory-derived a priori model offsets these limitations to a certain extent and permits generalization to theory (Aneshensel, 2002).

Conclusion

The study provides additional support for the Nursing Worklife Model, a more nuanced model derived from the Magnet Hospital Model of supportive professional practice environments (McClure et al., 1983). Our findings corroborate patterns of relationships among the facets of 'magnet like' nursing work environments established in North American settings and thereby provide direction for nurse managers in their efforts to promote recruitment and retention of valuable nursing resources to provide high quality patient care in today's challenging nursing work settings. The results also provide cross-cultural support for the NWM in Canadian and Australian nursing settings, highlighting the importance of creating work environments that support professional practice in nursing work environments around the world.

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Table 1: Latent Variables

Variable	Description/Example Items	Measurement
Nurse Manager Ability, Leadership, and Support of Nurses (Leadership)	• Supportive managers who acknowledge quality work, who are good leaders and who support nurses in decision-making.	Scale 1-4
Nurse Participation in Hospital Affairs (Participation)	• Opportunities for career development, participation in policy decisions, involvement in hospital governance and hospital committees. • Nursing administration that listens and responds to staff concerns. • A chief nurse who is equal in power and authority to other top-level hospital executives, and is highly visible and accessible to staff.	Scale 1-4
Collegial Nurse – Physician Relationships (Collegial Relationships)	• Teamwork, collaboration and good working relationships between doctors and nurses.	Scale 1-4
Nursing Foundations for Quality of Care (Foundations for Quality)	• Access to staff development, continuing education and preceptor programs for nurses. • The facilitation of high quality nursing care, including high standards, a nursing rather than medical philosophy, continuity of care, up to date nursing care plans, and an active quality assurance program.	Scale 1-4
Staffing and Resource Adequacy (Resources)	• Sufficient resources to provide quality patient care, including adequate staffing and appropriate skill mix, opportunities to discuss patient care with colleagues and support services to permit more patient contact.	Scale 1-4
Intend to Leave Present Nursing Job (Intent to Leave)	• Intending to leave current nursing position within 12 months	Dichotomous
Actively Looking for another Nursing Job (Actively Looking)	• Currently, actively, looking for another nursing position	Dichotomous

Table 2: Nurse Characteristics

	Canada (n=3156)	**Australia (n=1655)**		
	Mean (SD)	**Mean (SD)**	**t (df)**	**p (95% CI)**
Age	42.28 (10.19)	39.16 (11.89)	-8.99 (2878)	<0.01 (-3.81--2.44)
Experience (Years Nursing)	16.67 (10.88)	11.68 (11.23)	-15.29 (4678)	<0.01 (-5.88--4.55)
	N (%)	**N (%)**	**X^2 (df)**	**p**
Sex				
Female	3006 (95.25%)	1494 (90.66%)	38.51 (1)	<0.01
Male	150 (4.75%)	154 (9.34%)		
Employment Status				
Full time	2156 (68.51%)	985 (59.63%)	82.76 (2)	<0.01
Part time	951 (30.13%)	583 (35.29%)		
Casual	40 (1.27%)	84 (5.09%)		
Qualifications				
RN Diploma / Hospital Certificate	2313 (75.47%)	776 (48.41%)	334.35 (1)	<0.01
BScN/BN	752 (24.54%)	827 (51.59%)		
Intend to leave present nursing job	1045 (33.41%)	366 (22.34%)	63.73 (1)	<0.01
Actively looking for another nursing job	1229 (39.44%)	321 (19.62%)	192.18 (1)	<0.01

Table 3: Practice Environment Scale Scores, Internal Consistency & Correlations, by country

	Mean (SD)	α/pc*	1	2	3	4	5	6
Canada								
1 Leadership	2.49 (0.70)	0.86/0.77						
2 Participation	2.32 (0.56)	0.86/0.86	0.67					
3 Collegial Relationships	2.90 (0.66)	0.85/0.81	0.35	0.39				
4 Foundations for Quality	2.82 (0.47)	0.79/0.79	0.56	0.68	0.42			
5 Resources	2.25 (0.69)	0.83/0.76	0.45	0.49	0.36	0.49		
6 Intent to Leave	--	--	-0.28	-0.21	-0.18	-0.21	-0.20	
7 Actively Looking	--	--	-0.25	-0.23	-0.18	-0.25	-0.23	0.74
Australia								
1 Leadership	2.9 (0.64)	0.82/0.82						
2 Participation	2.6 (0.58)	0.86/0.87	0.71					
3 Collegial Relationships	2.9 (0.60)	0.82/0.82	0.47	0.54				
4 Foundations for Quality	3.0 (0.49)	0.78/0.80	0.65	0.72	0.52			
5 Resources	2.5 (0.67)	0.80/0.70	0.50	0.55	0.43	0.54		
6 Intent to Leave	--	--	-0.16	-0.15	-0.08	-0.15	-0.08	
7 Actively Looking	--	--	-0.16	-0.14	-0.09	-0.15	-0.16	0.46

** α=Cronbach's alpha; p_c=Composite reliability; all correlation coefficients significant at p<0.05*

Figure 1 Hypothesized Model

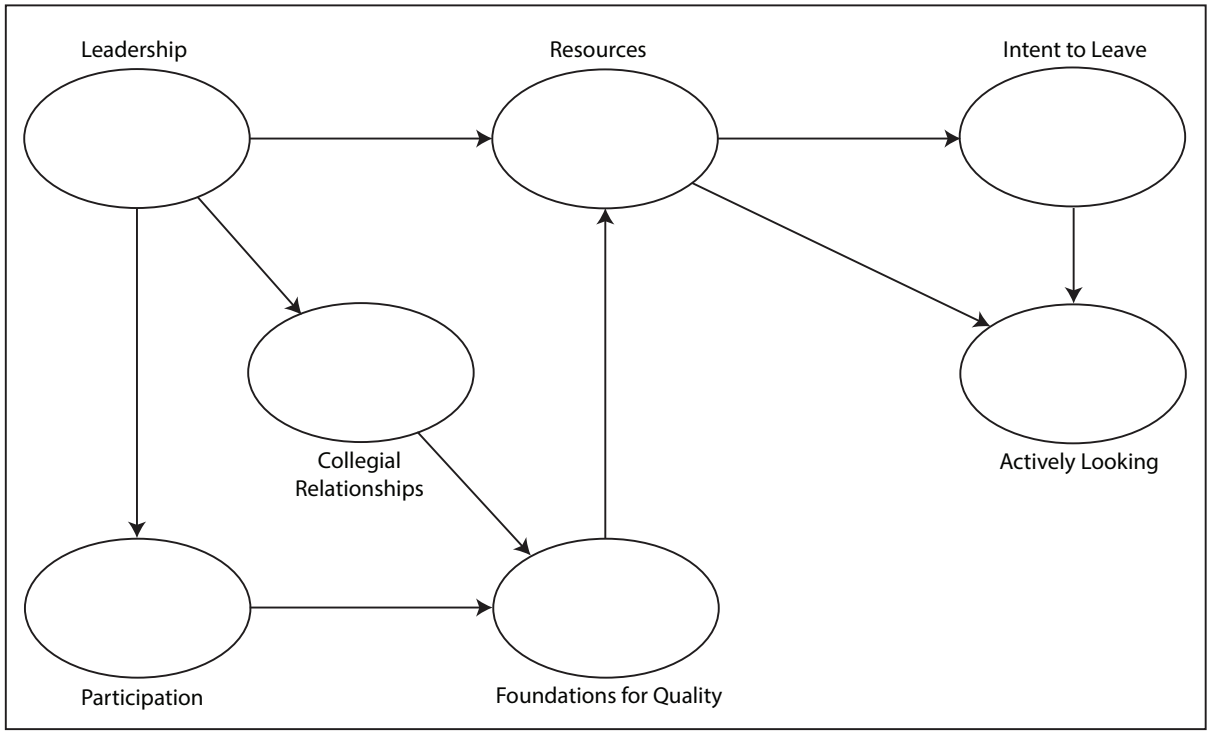
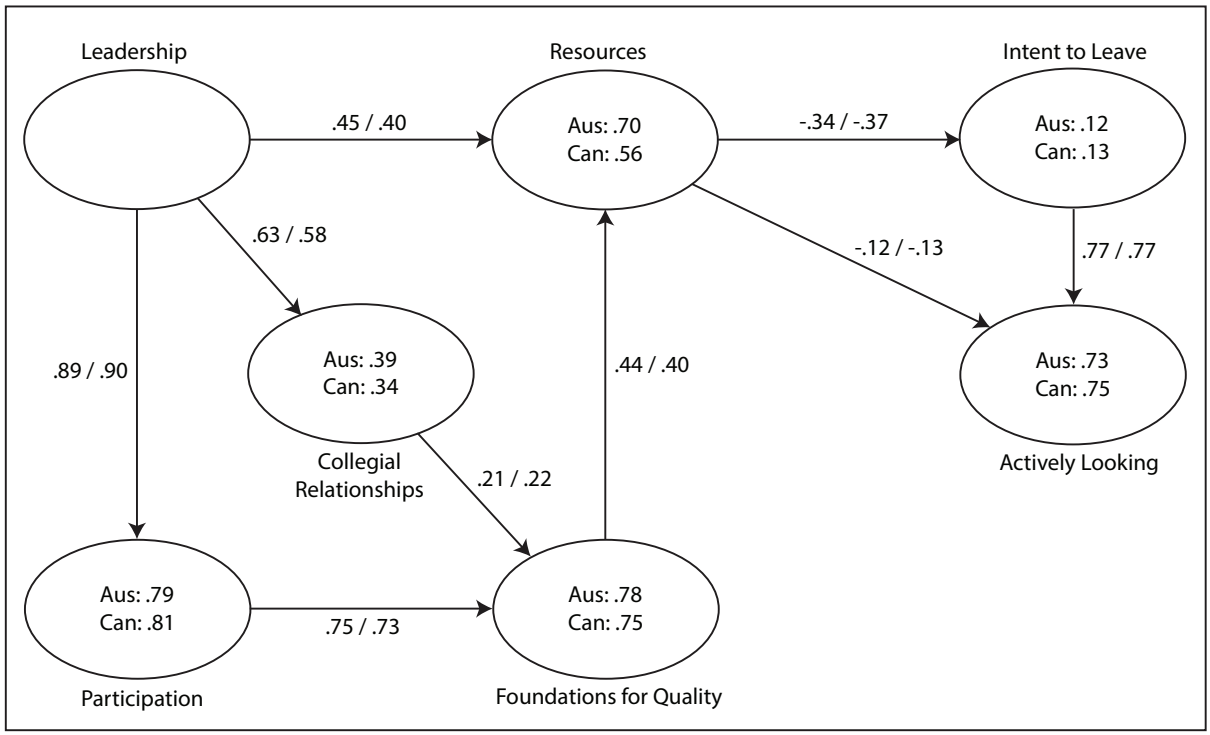


Figure 2 Final Model



Notes: Path coefficients presented as Australia/Canada. R^2 values are enclosed in the variables. Intent to leave and actively looking are dichotomous single indicators, so pseudo-R^2 values are enclosed within the variables. In this model, factor loadings and intercepts on latent variables were constrained to equality across countries. Moreover, unstandardized path coefficients were constrained to equality across countries.