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The Influence of Interpersonal Relationships on Nurse Managers' Work Engagement and Proactive Work Behavior

Dr. Nora E. Warshawsky, PhD, RN [Assistant Professor],

College of Nursing, University of Kentucky, Lexington, KY

Dr. Donna S. Havens, PhD, RN, FAAN [Professor], and

School of Nursing, The University of North Carolina at Chapel Hill, Chapel, NC

Dr. George Knafel, PhD [Professor]

School of Nursing, The University of North Carolina at Chapel Hill, Chapel, NC

Abstract

Objective—This study tested the effects of interpersonal relationships on nurse managers' work engagement and proactive work behavior.

Background—An engaged workforce may help health care organizations improve performance. In health care, nurse managers are responsible for creating motivating work environments. They also need to be engaged, yet little is known about what influences nurse managers' performance.

Methods—A self-administered electronic survey was used to collect data from 323 nurse managers working in acute care hospitals. Instruments included the Relational Coordination Scale, Utrecht Work Engagement Scale, and Proactive Work Behavior Scale.

Results—Interpersonal relationships with nurse administrators were most predictive of nurse managers' work engagement. Interpersonal relationships with physicians were most predictive of nurse managers' proactive work behavior.

Conclusions—Organizational cultures that foster quality interpersonal relationships will support the job performance of nurse managers.

Improving patient safety in resource-constrained environments is a daunting task facing health care organizations. Non-health care, high-performing organizations have demonstrated that the driving force behind top performance is an engaged work force (1, 2). Engaged employees are energized, dedicated, and motivated to persevere and complete their work (3). Managers are critical for creating environments fostering employee engagement (2). Managers must be engaged in their own work to create these stimulating work environments. In health care, nurse managers are expected to create motivating work

Corresponding Author: Dr. Warshawsky, 557 College of Nursing, University of Kentucky, Lexington, KY, 40536-0232
nora.warshawsky@uky.edu.

SUPPLEMENTAL DIGITAL CONTENT #1(Table 1); SDC #2 (Table 3); SDC #3 (Table 5); SDC #4(Table 6)

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environments for nurses, yet little is known about what motivates nurse managers. This study tested factors that positively influence nurse manager work performance.

Work Engagement

Work engagement is a motivational state characterized by vigor, dedication, and absorption (3). Engaged employees enjoy challenges, exhibit mental resilience, and are engrossed in their work. While many early studies of work engagement were conducted in business settings, studies of work engagement in health care are beginning to appear in the literature. In a literature review, Simpson (4) found only one study (5) of work engagement in nurses. Much of what was studied in nursing related to this concept prior to 2007 was burnout (4), what some consider the antipode of work engagement (6). Subsequent to Simpson's (4) review, 1 study of nurse managers' work engagement (7) and 12 studies of staff nurses' work engagement (8-19) were published. Mackoff (7) identified characteristics of engaged nurse managers and work environments that potentially foster engagement in nurse managers. Based on studies of staff nurses, higher levels of work engagement were associated with higher levels of patient satisfaction (12), quality of care (8), and work effectiveness (9). Higher staff nurse work engagement was associated with increased staff nurse willingness to voice concerns about patient care (8) and to perform discretionary extra-role behaviors (10). Because staff nurse work engagement was influenced by nurse managers (5, 8, 10) and resulted in proactive work behaviors that promote safe patient care (8, 10) and improved patient outcomes (8, 9, 12), exploring nurse manager work engagement will contribute insights as to why some nursing units achieve superior patient outcomes.

The work engagement literature suggests that high quality interpersonal relationships foster work engagement. Together, work engagement and interpersonal relationships may promote proactive work behaviors associated with improved organizational performance. Therefore, the specific aim of this study was to test the influence of interpersonal relationships on nurse manager work engagement and proactive work behavior.

Model of Work Engagement

According to the model of work engagement (3, 20), job resources and job demands affect the development of work engagement in employees. Job resources are physical, psychological, social, and organizational features that reduce job demands; enhance an employee's ability to meet work goals; and stimulate personal growth, learning, and development (20). Job resources are obtained from organizational structures, through social and interpersonal relationships, from organization of the work, or from the task itself. Job resources found to increase work engagement for managers include autonomy, performance feedback, supportive colleagues, and supervisory coaching (3, 20). For managers, job resources could include the quality of their relationships with their peers and nurse administrators.

Job demands are physical, social, or organizational aspects of a job that require sustained physical or psychological effort leading to adverse physical and/or psychological outcomes (20). Job demands may reduce the effects of job resources that foster work engagement, resulting in burnout. Examples include adverse work environments, role overload, role

ambiguity, role conflicts, and time pressures. Nurse manager job demands include large spans of control.

Personal resources may also build work engagement (20, 21). Personal resources, such as self-efficacy and optimism, are individual traits that can be developed to improve work performance. For a nurse manager, personal resources could include graduate education and nurse manager experience (Figure 1).

Study Design

Use of a self-administered electronic survey (Qualtrics, Inc©) facilitated data collection from a large sample of nurse managers working in acute care hospital settings. Participants were recruited using email addresses of nurse manager members of the North Carolina Organization of Nurse Leaders (NCONL) and biweekly electronic communications to members of the American Organization of Nurse Executives (AONE). Procedures were included to promote a high response rate (22, 23).

Nurse managers were defined as the 1st-line manager of patient care area(s) with 24-hour responsibility for operational, fiscal, and performance accountability. Although nurse manager was considered the most common title for participants, there may have been some with a different organizational title but whose duties matched the given definition of nurse manager. Only nurse managers working in acute-care hospitals and in their positions for more than 3 months were included in the study.

Sample Characteristics

A total of 323 participants completed the survey: 139 were members of AONE only (response rate 13%), 34 were members of NCONL only (response rate 44%), 4 were members of both AONE and NCONL, and 121 were not members of either organization. Nurse managers from 44 states participated. Of these, 290 participants met the inclusion criteria. An a priori power analysis established that adequate power existed to detect significant relationships if present.

The average nurse manager in this sample was 47 year-old Caucasian female, had 9.1 years of nursing management experience and 4.8 years in their current position. Most held a baccalaureate degree in nursing (BSN) (51.7%) or a master's degree in nursing (MSN) (33.8%). Many respondents also held non-nursing baccalaureate degrees (46.9%) and master's degrees (43.7%). Table 1 (SUPPLEMENTAL DIGITAL CONTENT #1) presents the sample demographics compared to the 2008 National Sample Survey of Registered Nurses (24). The average span of control was 59.8 ($SD = 37.8$) full-time equivalents (FTEs) across 1.6 units ($SD = 1.0$). These nurse managers were responsible for as many as 220 FTEs across 7 patient-care units.

Human Subjects Protection—The institutional review board at The University of North Carolina at Chapel Hill granted expedited approval. Completing the survey implied consent.

Instruments

Table 2 presents the instruments, subscales, sample items, and reliability statistics.

Interpersonal Relationships—Interpersonal relationships (IPR) were measured using the Relational Coordination Scale (RCS) (25). It consisted of 3 items measuring the quality of relationships between work groups: shared knowledge, shared goals, and mutual respect. Four items measured the quality of communication based on frequency, timeliness, accuracy, and problem solving versus blaming. The item stems varied and were rated on a 5-point Likert scale (25). Each item was scored 3 times to assess the quality of IPR among nurse managers, between nurse managers and nurse administrators, and between nurse managers and physicians in relation to improving organizational processes. Only nurse managers were surveyed; therefore, the RCS reflected nurse managers' perceptions of the quality of IPR among nurse managers and between nurse managers, nurse administrators, and physicians.

Work Engagement—Work engagement was measured using 8 of the 9 items of the Utrecht Work Engagement Scale (UWES) (26). Participants rated each item on a 7-point Likert scale (0 = Never to 7 = Every Day) according to how often the participant experienced the feeling described (3). In this study, the item “*I am happy when I am working intensely*” was inadvertently omitted from the survey. Prior analyses indicated that this item explained the least amount of variance in the absorption subscale (26), which was omitted from several analyses because absorption was not considered a core dimension of engagement (10, 11, 15, 27). Based on further psychometric analyses, Schaufeli and Bakker (28) concluded that work engagement was best measured using the full scale. The Cronbach's alpha for the 8 available items was acceptable at 0.89 (29); thus, the total UWES mean score was used for the analyses.

Proactive Work Behavior—Proactive work behavior was measured using the 13-item Proactive Work Behavior Scale (PWB) (30). The scale emphasizes initiating internal organizational change. The 4 subscales included taking charge, individual innovation, problem prevention, and voice. Respondents rated each item on a 5-point Likert scale (1 = Very infrequently to 5 = Very frequently) in response to the stem, “How frequently do you ...”.

Analysis

Only cases with complete information on the outcome variable ($n = 290$) were retained for analysis using SAS version 9.2 (Cary, NC). Of the retained cases, there was 1 item missing from the UWES for each participant and few missing values for the remaining variables.

Mean scores

The composite mean RCS was highest among nurse managers (3.94 out of a possible 5, $SD = 0.58$), followed by nurse administrators (3.83, $SD = 0.68$), and lowest with physicians (3.34, $SD = 0.75$). The UWES total mean score was 6.01 out of 7 ($SD = 0.84$). The PWB total mean score was 4.01 out of 5 ($SD = 0.48$).

Covariate Selection

Potential covariates were selected based on theory and literature. Mean UWES was regressed separately on each possible covariate. Only age ($p = .017$) was significantly associated with UWES (Table 3; SUPPLEMENTAL DIGITAL CONTENT #2). The mean PWB was regressed separately on each possible covariate. Years of nurse manager experience ($p < .001$), years worked on current unit ($p = .050$), and age ($p = .004$) were significantly associated with PWB. Backwards elimination, forward selection, and stepwise regression of PWB on years of nurse manager experience, years worked on current unit, and age was used to identify a parsimonious model. Nurse manager experience was the only significant covariate. Based on these findings, age was used as a covariate in regression models for UWES and nurse manager experience was used in regression models for PWB.

Mediation Analyses

In order for a mediated relationship to be statistically significant (31), 3 conditions had to be satisfied. First, RCS for each interpersonal group (among nurse managers, between nurse managers and nurse administrators, and between nurse managers and physicians) were significantly related to PWB ($p < .001$). Second, RCS for each interpersonal group were significantly related to UWES ($p < .001$). Third, the addition of UWES reduced the effect of RCS (interpersonal relationships) on proactive work behavior. Together, RCS and UWES explained 18.8% to 23.8% of the variance in PWB (Table 4). UWES mediated the effects of RCS on proactive work behavior and was affirmed with a significant Sobel test as well as nonparametric confidence intervals based on 1,000 bootstrapped resamples (Table 5; SUPPLEMENTAL DIGITAL CONTENT #3).

The analyses were repeated adding age and nurse manager experience to the models. The mediated relationships held and together, RCS and UWES, controlling for age and nurse manager experience, explained 21.6% to 25.4% of the variance in PWB. Given that RCS for each interpersonal group was significantly associated with UWES and PWB, an additional analysis was conducted that considered the effects of RCS of all 3 interpersonal groups simultaneously on UWES and PWB.

Backwards elimination, forward selection, and stepwise regression was used to identify which of the 3 interpersonal groups of RCS were significant at the $p = .05$ level. Only RCS with nurse administrators and RCS with physicians were included in the additional mediation analysis (Figure 2). First, RCS with nurse administrators ($\beta = 0.103$, $p = .017$) and RCS with physicians ($\beta = 0.190$, $p < .001$), controlling for nurse manager experience ($\beta = 0.011$, $p = .002$), were significantly related to PWB. Second, RCS with nurse administrators ($\beta = 0.324$, $p < .001$) and RCS with physicians ($\beta = 0.259$, $p < .001$), controlling for age ($\beta = 0.013$, $p = .01$), were significantly related to UWES. In the 3rd step, RCS with nurse administrators ($\beta = 0.049$, $p = .254$) became a non-significant predictor of PWB. RCS with physicians ($\beta = 0.149$, $p < .001$) and UWES ($\beta = 0.164$, $p < .001$), controlling for nurse manager work experience ($\beta = 0.010$, $p = .005$), however, were significantly associated with PWB and explained 25.7% of the variance in PWB (Table 6 SUPPLEMENTAL DIGITAL CONTENT #4).

Findings

Work Engagement

On average, nurse managers reported they engaged with their work several times a week (mean score 6.01, $SD = 0.83$), much higher than samples of business managers (4.22, $SD = 1.00$) (32) and acute care staff nurses working in the United States (4.60, $SD = 0.62$) (17). The high level of work engagement suggests that these nurse managers considered the nature of their work to be meaningful and they possessed sufficient job and personal resources to mitigate the job demands present in their work (20).

Interpersonal Relationships

The mean score for IPR ranked highest among nurse managers and their peers (3.94, $SD = 0.58$), followed by IPR with nurse administrators (3.83, $SD = 0.68$), and lowest-- and most variable--with physicians (3.34, $SD = 0.75$). Across all groups, nurse managers rated the quality of these IPR slightly above the midpoint of the scale range, suggesting that all these relationships could be improved. In light of these scores, there may be other job and personal resources not included in the study that contributed to the high work engagement scores of this nurse manager sample. Nurse managers who participated in this study were asked to consider each of these IPR in relation to quality improvement processes; therefore, the scores may not reflect the quality of these relationships when other work processes are considered.

When IPR for each group were regressed separately on work engagement, IPR for each group were significantly associated with work engagement. Relational leadership styles of nurse managers and preceptors have previously been reported to build staff nurse work engagement (8, 13, 33). These findings are consistent with the model of work engagement, (20) suggesting that supervisory and co-worker relationships are instrumental in building work engagement.

Multivariate analyses considering the 3 groups of nurse manager IPR simultaneously revealed that IPR with nurse administrators were the strongest predictor of work engagement. Interpersonal relationships with physicians explained more of the effect on proactive work behavior than relationships with peers or nurse administrators. Although IPR with other nurse managers were rated highest, they did not explain any variance in engagement or proactive work behavior beyond that explained by IPR with nurse administrators and physicians. This suggests that quality relationships with supervisors are an important source of motivation for nurse managers while quality relationships with physicians exert stronger effect on proactive work behavior.

Others (8, 34, 35) studied the effects of IPR with peers and supervisors on work engagement and reported that coworker relationships exerted more influence on work engagement than supervisory relationships, the opposite of the findings from this study. Wong et al. (8) concluded that staff nurses' identification with peer groups was stronger than with nurse managers because of more frequent interaction with peers. The RCS however, accounted for frequency of communication. In fact, of the 3 groups, the nurse managers' peer relationships were scored the highest in this study yet they explained the least variance in nurse manager

engagement and proactive work behavior. A possible explanation may be the measures used or that the nature of the interpersonal relationships of nurse managers may differ from those of business managers and staff nurses.

Proactive Work Behavior

The nurse managers in this study were asked to rate how proactively they responded to medical errors identified in their units. The average PWB score was 4.01 ($SD = 0.48$) on a 5-point scale, indicating that this sample of nurse managers often responded proactively to medical errors.

Interpersonal relationships should directly and indirectly, through work engagement, influence proactive work behavior (20, 21). Bivariate analyses supported positive associations between interpersonal relationships for each of the 3 groups and proactive work behavior and also between work engagement and proactive work behavior. Multivariate analyses revealed that work engagement partially mediated the association between each type of IPR and proactive work behavior. This suggests that the model tested was not inclusive and that other characteristics of the job or social context (20, 36) may help explain proactive work behavior.

The social context should build psychological safety that enables workers to take risks and persevere in the face of adversity. Collegial relationships between staff nurses and physicians are known to influence the quality of professional nurse work environments and staff nurse job satisfaction (37-39). This study suggests that the quality of interpersonal relationships with physicians also influences nurse managers' proactive work behavior.

Interpersonal relationships with physicians were rated the lowest rated of the 3 groups studied. Efforts to improve nurse manager perceptions of interpersonal relationships with physicians might also influence nurse managers' willingness to engage in proactive work behavior, and improve patient outcomes as well.

Not only did IPR of nurse managers have varying effects on work engagement, they also exerted varying degrees of influence on proactive work behavior. Although all 3 groups of IPR were associated with work engagement, IPR with nurse administrators were the most predictive of nurse managers' work engagement. Yet it was the nature of the relationship with physicians that most influenced nurse managers' decisions to proactively act on medical errors and other patient care problems.

Implications for Practice

Because collaborative work environments are more likely to build work engagement and proactive work behaviors in nurse managers, nurse leaders should intentionally create organizational cultures that support collaborative interpersonal relationships. Quality interpersonal relationships can be developed through organizational design, collaborative recruitment processes, recognition and reward systems, communication strategies, and mentors (25, 40, 41).

Organizational designs, such as reduced spans of control for nurse managers, promote the development of quality IPR with staff nurses by having time to coach and build connections (25). These may also improve nurse manager relationships with physicians. For example, employing physicians as hospitalists encourages physicians to align their goals with the organization. By creating partnerships of nurse managers and physicians, responsibility can be shared for achieving quality patient outcomes.

Recruitment processes that include nurse managers, nurse administrators, and physicians help build social networks that increase opportunities to share knowledge and improve communication (41). The inclusion of all team members in the hiring process creates 3 important results. First, teamwork skills of prospective candidates for positions are assessed (40). Second, candidates learn that interdisciplinary teamwork is valued (25). Third, participation in the selection process increases personal investment by the selection team in the success of the newly employee (41).

Recognition and rewards need to be based on team performance and achievement of shared goals (25). Performance monitoring systems developed to reflect cross-functional performance encourage all disciplines relevant to a process of care to develop quality IPR based on shared goals, shared knowledge, and mutual respect (25). Shared rewards for exemplary team performance reinforce team behaviors.

Future Research

There were nurse managers who scored at the lower limits of the ranges indicating that they experienced poor IPR, engaged in their work less than weekly, and rarely acted proactively. More research is needed to identify additional factors that contribute to these low scores.

In this study, span of control was treated as a control variable and not a significant predictor of work engagement or proactive work behavior. Future analyses using span of control are recommended.

Limitations

Limitations included the cross-sectional study design and assumption of temporal sequencing; therefore, causality cannot be confirmed (42). A convenience sample was used and may not be representative of the general nurse manager population, thus, generalizability of findings may be limited. All data were obtained through self-reported surveys. Respondents were assured of confidentiality and asked to respond according to their actual behavior in an attempt to mitigate potential common method bias (43). The participants were primarily female, reflecting the nursing profession. Thus, some of the variance in means scores may have reflected gender bias rather than variation due to the nurse manager role. The outcome measure of proactive work behavior was used as a proxy for quality and was not a measure of actual patient outcomes. Finally, although the missing item from the UWES-9 may have skewed the analyses, the Cronbach's alpha for the 8 items was .89 and is considered good for an established scale (29).

Conclusion

Hospitals are challenged to achieve consistently superior patient outcomes while facing mounting financial constraints. Studies of high-performing organizations suggest that a key to success is an engaged work force that proactively resolves performance problems. In health care, nurse managers are considered an important driver of staff nurses' work engagement, yet little is known about the determinants of nurse manager performance. The findings from this study fill part of the knowledge gap related to nurse managers' work engagement and job performance. Although interpersonal relationships with peers and physicians influenced nurse managers' work engagement, it is the nature of their interpersonal relationships with nurse administrators that most strongly influenced nurse managers' work engagement. Furthermore, it was the combination of nurse managers' work engagement, quality interpersonal relationships with physicians, and experience as a nurse manager that most strongly influenced the degree to which nurse managers acted in a proactive manner, an important behavior in the prevention of medical errors and improvement of the quality of patient care. As health-care organizations respond to the mandates of health-care reform, nurse managers should be relied upon to actively monitor for and prevent adverse effects on the quality of patient care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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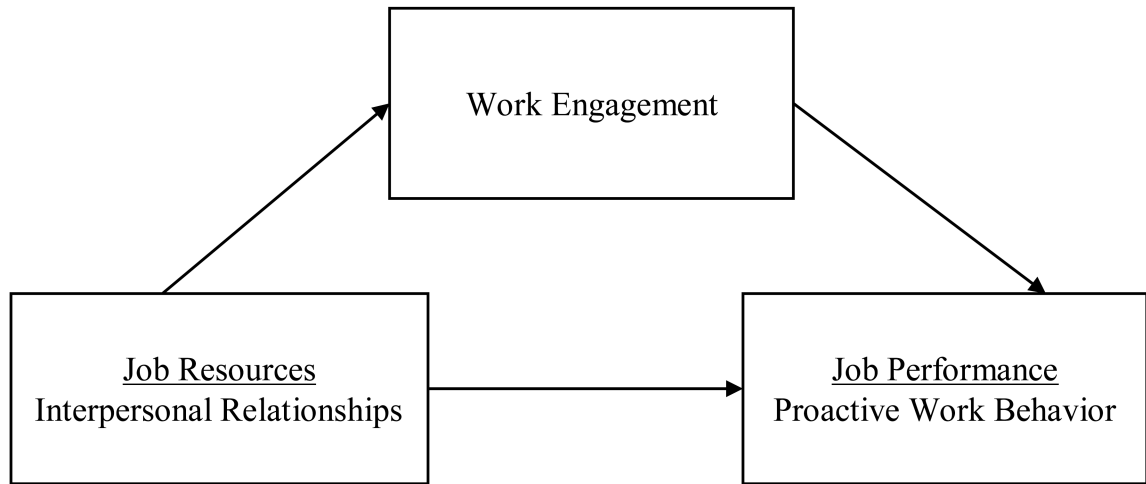


Figure 1. Model of Engagement

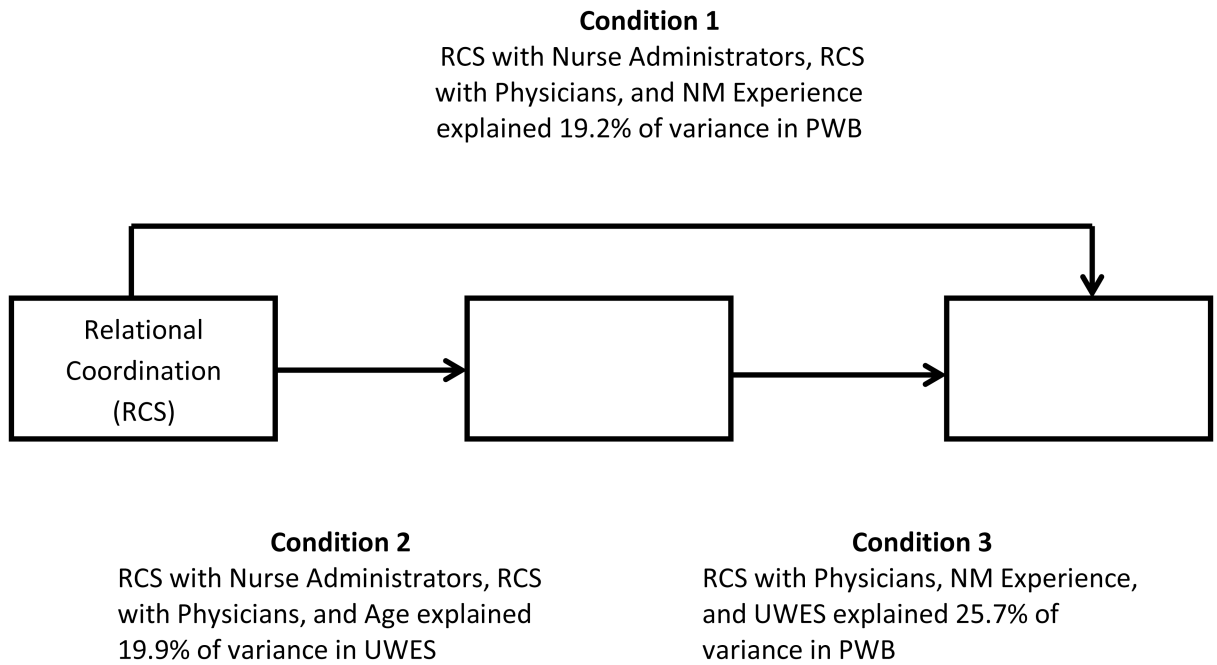


Figure 2.
Full mediation model.

Table 2
Instruments, Mean Scores and Scale Reliability Statistics (N = 290)

Scale (# items)	Sample Item	Mean (SD)	Range	Cronbach's Alpha
Relational Coordination (7)	How much do the members of these groups share your goals for improving the quality of patient care?			
Among Nurse Managers		3.94 (0.58)	1.86–5.00	.86
With Nurse Administrators		3.83 (0.68)	1.29–5.00	.90
With Physicians		3.34 (0.75)	1.14–5.00	.89
Utrecht Work Engagement Scale	I am immersed in my work.			
Absorption (2)				.67
Vigor (3)				.87
Dedication (3)				.89
Total Scale (8)		6.01 (0.83)	2.89–7.00	.89
Proactive Work Behavior Scale	How frequently do you try to institute new work methods?			
Problem Prevention (3)				.68
Individual Innovation (3)				.81
Voice (4)				.80
Taking Charge (3)				.85
Total Scale (13)		4.01 (0.48)	2.25–5.00	.90

Table 4
Mediation Models of Proactive Work Behavior (PWB) and Work Engagement (UWES) on Relational Coordination Variables, Nurse Manager Experience, and Age

Predictor Variable	MODEL 1: Relational Coordination among Nurse Managers			MODEL 2: Relational Coordination with Nurse Administrators			MODEL 3: Relational Coordination with Physicians		
	Parameter Estimate	p-value	% Variance	Parameter Estimate	p-value	% Variance	Parameter Estimate	p-value	% Variance
Condition 1: Regression of PWB on Relational Coordination									
Relational coordination variable	0.328	<.001	5.2	0.464	<.001	14.4	0.411	<.001	13.5
Condition 2: Regression of UWES on Relational Coordination									
Relational coordination variable	0.183	<.001	4.9	0.202	<.001	8.3	0.253	<.001	15.4
Condition 3: Mediation Model for PWB									
Relational coordination variable	0.110	.015	18.8	0.108	.008	19.1	0.180	<.001	23.8
UWES	0.220	<.001		0.204	<.001		0.179	<.001	
Mediation Analysis with Covariates									
Condition 1: Regression of PWB on Relational Coordination and Nurse Manager Experience									
Relational coordination variable	0.191	<.001	9.5	0.205	<.001	12.7	0.238	<.001	17.5
Nurse manager experience	0.140	<.001		0.014	<.001		0.010	0.004	
Condition 2: Regression of UWES on Relational Coordination and Age									
Relational coordination variable	0.320	<.001	6.8	0.461	<.001	15.8	0.400	<.001	14.6
Age	0.014	.009		0.014	.006		0.012	.022	
Condition 3: Mediation Model for PWB on Relational Coordination, Nurse Manager Experience, and UWES									
Relational coordination variable	0.121	.007	21.6	0.116	.004	21.9	0.168	<.001	25.4
Nurse manager experience	0.011	.001		0.011	.001		0.009	.007	
UWES	0.207	<.001		0.190	<.001		0.173	<.001	