

Factors affecting Job Involvement in Taiwanese Nurses: A Structural Equation Modeling Approach

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Abstract

The caring behaviors and self-efficacy of nurses can influence their intentions to leave an organization and the quality of their nursing care. Job involvement is a crucial predictor of nurse turnover. Evidence-based data shown caring behavior and self efficacy are the optimum available evidences of the factors that support nurses' job involvement. A cross-sectional and correlation research design was adopted for this study. Overall, 405 clinical nurses employed at a hospital in southern Taiwan were recruited for this study. Of these nurses, 338 completed the questionnaire, for an effective response rate of 83.4%. The results showed that the postulate model fit the data in this study well. Caring behaviors are positive and significantly directly related to self-efficacy. Additionally, nurses' self-efficacy was not significantly correlated to their job involvement. By contrast, caring behaviors exerted a significant influence on job involvement. Nurses who perceive that their caring behaviors are recognized and rewarded are more likely to be involved in their work environment. Self-efficacy can be used as a screening variable when predicting job involvement. Further research should adopt a longitudinal research design to understand how caring behaviors and self-efficacy change over time, and how job involvement develops as a factor in the model.

Keywords: Caring, self-efficacy, nursing care, job involvement

1 Introduction

The National Union of Nurses' Associations (NUNA) have reported that an aging nurse workforce, retention problems, and difficulty recruiting young people into the field have led to a severe shortage of nurses in Taiwan [1]. Nurses who are satisfied with their work

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are less likely to change professions and exhibit superior work performances. Job involvement has always been a crucial issue in nursing because of its association with predicting nurse turnover. The level of job involvement reported by nurses in Taiwan is lower than that reported in other countries, and more than half the nurses in Taiwan have contemplated leaving the profession at some point in time [2]. Several authors have identified the following factors as contributing to job involvement: caring roles [3], self-efficacy [4] separately, but few studies have examined the factors that caring and self-efficacy affect job involvement among nurses. Knowledge of the factors that contribute to nurses' job involvement can provide a useful framework for hospital managers to retain nurses and create a work environment that facilitates satisfactory nursing performance and increases job involvement.

Caring involves the commonly held belief that nurses' caring behavior is the primary concern of quality nursing care [5] and it is related to nurses' job satisfaction and intentions to remain in a position and profession [6]. Chenoweth et al. [3] systematic review of 226 peer-review papers concluded that caring behavior is the optimum available evidence of the factors that support nurse recruitment and retention. Investigating nurses' job satisfaction, Burtson et al. [7] have indicated that nurses' caring behaviors are key motivational factors that influence nurse retention and work satisfaction.

Self-efficacy is defined as people's perception and judgment of their ability to perform specific tasks in a given situation [8]. The strength of self-efficacy depends on the person's level of motivation, ability to face challenges, and perseverance against obstacles, and can affect nurses' thinking patterns, decision making, level of commitment, and achievements [8].

Under the current conditions of the health care labor market, clinical nurses must determine and assess problems, make decisions, and control nursing practices with limited time. Thus, by improving their self-efficacy, nurses can acquire greater independence and control over their practice area, increase their involvement in decisions that affect their work and patient care, and exhibit a firm commitment to the nursing profession [9]. Previous researchers have found that nurses' self-efficacy is correlated to their job satisfaction, work commitment, and level professional activity, and is an essential factor influencing the quality of nursing practice [10]. Wu et al. [11] surveyed 202 medical care personnel at three teaching hospitals in Taiwan and reported that self-efficacy was positively correlated with professional commitment and increased the job involvement of health care personnel. A study of Portuguese nurses indicated that self-efficacy was the most crucial component influencing the work engagement and job involvement of registered nurses and supervisors [4].

Job involvement is a specific aspect of employees' relationship with their job [12] and refers to their general attitude toward work values [13]. Lodahl and Kejner [14] proposed the concept of job involvement, which they defined as referring to a person's psychological identification with his or her work or self-image in relation to the importance of the work. Job involvement has always been a crucial in nursing because of its association with predicting nurse turnover. Ma et al. [15] survey 1,016 Taiwanese nurses and found that nurses who intended to remain in their current jobs reported higher job satisfaction than those who intended to leave. They further highlighted that if nurses are satisfied with their job and work performance, they might exhibit high commitment and job involvement. However, the majority of the research conducted regarding nurses' caring behaviors and job satisfaction [16], self efficacy and job satisfaction [17], and job

involvement and retention [18], but did not indicate a link between nurses' caring, self-efficacy, and job involvement.

2 Preliminary Notes

The purpose of this cross-sectional study was to test a model of the factors that affect the job involvement of nurses in Taiwan. We proposed a structural equation model for examining the relationships between caring, self-efficacy, and job involvement. We hypothesized that nurses' caring and self-efficacy positively influence their job involvement. In other words, caring and self-efficacy are independent variables, and job involvement is a dependent variable. The model developed in this study was tested by using structural equation modeling (SEM) to evaluate the fit (Figure 1).

Accordingly, the following four hypotheses were formulated:

H1: The proposed job involvement model possesses an acceptable goodness-of-fit, as tested using SEM.

H2: Caring exert a positive influence on self-efficacy.

H3: Caring exert a positive influence on job involvement.

H4: Self-efficacy exerts a positive influence on job involvement.

Data were collected from February to August 2012. For this study, participants were recruited from a hospital in southern Taiwan. The inclusion criteria required the clinical nurses to possess at least 6 months of clinical experience and the ability to read and write Chinese. However, head nurses and administrators were excluded from the research. We recruited a total of 405 clinical nurses, 67 of whom were excluded because of invalid data, providing an effective response rate of 83.4%.

This study was approved by the Institutional Review Board of a hospital in southern Taiwan (IRB approval number: SCM1001004). Interested and eligible participants were informed about the study and written consent was obtained before participants completed the questionnaires. Participants were informed that they could withdraw from the study at any time without reason or penalty. We recruited a total of 405 clinical nurses, 67 of whom were excluded because of invalid data, providing an effective response rate of 83.4%.

Socio-demographics: A researcher-developed tool was used to gather information of the participants' background; this data included age, educational achievement, marital status, working years, and work pressure.

Modified Caring Assessment Report Evaluation Q-sort: The 50-item modified CARE-Q scale used in this study was primarily based on that Caring Assessment Report Evaluation Q-Sort (CARE-Q) developed by Larson [19] and the results of reviewing relevant literature. The original scale comprised 50 items. A 5-point Likert scale, where 1 indicated "strongly disagree" and 5 indicated "strongly agree," was used for data collection. The higher total instrument scores, the greater caring behaviors of nurses. For factor analysis, we divided the items in the CARE-Q into the following six dimensions: accessible (5 items), explains and facilitates (6 items), comfort (8 items), anticipates (5 items), trusting relationship (11 items), and monitors and follows through (8 items). The content validity index (CVI) was 0.91. The Cronbach's α was 0.97 for the overall scale, and 0.80, 0.78, 0.85, 0.87, 0.91, and 0.93 for the six subscales. Construct validity was examined using confirmatory factor analysis (CFA). The results of the CFA showed that for the proposed model, $X^2 = 12.62$,

$df = 8$, $p = .16$, the root mean square error of approximation (RMSEA) = 0.04, the comparative fit index (CFI) = 0.99, and the root mean square residual (RMR) = 0.01.

Self Efficacy Scale: For the self-efficacy scale used in this study, we adopted a Chinese inventory developed by Hsu ^[20] and referenced a literature review. Through factor analysis, we divided the self-efficacy scale into the following five dimensions: collaboration (6 items), negotiation (5 items), empowerment (6 items), planning (5 items), and competence (7 items). The CVI of the scale was 0.93. The Cronbach's α was 0.97 for the overall scale and 0.78, 0.72, 0.79, 0.87, and 0.85 for the five subscales. The results of the CFA indicated that for the self-efficacy scale, the $X^2 = 3.36$, $df = 3$, $p = .03$, RMSEA = 0.01, CFI = 0.99, and RMR = 0.02.

Modified Job Involvement Instrument: The development of the job involvement instrument was primarily based on a job and work involvement scale established by Kanungo ^[13] and after reviewing relevant literature. The scale developed for this study comprised 16 items. A 5-point Likert scale, where 1 indicated "strongly disagree" and 5 indicated "strongly agree" was designed for data collection. Higher scores indicated more positive job involvement. Following item analysis, 10 items were retained and used to establish the job involvement instrument. During factor analysis, we divided the instrument into the following two dimensions: work performance (5 items) and attitude (5 items). The CVI of the job involvement instrument was 0.89. The Cronbach's α was 0.85 for the entire job involvement instrument and 0.83 and 0.75 for the two subscales. The results of the CFA showed that regarding the job involvement instrument, the $X^2 = 20.17$, $df = 9$, $p = .02$, RMSEA = 0.05, CFI = 0.96, and RMR = 0.04.

For this study, we used IBM's SPSS, Version 20.0 (SPSS Inc., Chicago, IL, USA) and Amos 21.0 for data entry and analysis. SEM was used to test the model regarding the relationships between the participants' socio-demographic data, caring behavior, self-efficacy, and job involvement. The model fit criteria proposed by Bagozzi et al. [21] were used as references, specifically, the preliminary fit criteria, overall model fit criteria, and internal model structure fit criteria. CFA was performed to evaluate the factor structures of the aforementioned instruments.

3 Main Results

Overall, 338 clinical nurses completed the questionnaires. The participants' ages ranged from 20 to 45 years, with a mean of 30.67 years ($SD = 5.86$). Participants' work years ranged from six months to 20 years, averaging 7.8 years ($SD = 3.46$). In addition, the majority of the participants (56.8%) were single; 280 (82.8%) had acquired a university education. Furthermore, 36% perceived extremely high work pressure, with 103 participants (30.5%) perceived high work pressure in their work environment.

3.1 Preliminary Model Fit Criteria

Bagozzi et al. ^[21] designated the "preliminary model fit criteria" as the measurement for assessing model fitness. The estimated parameters of the theoretical model for nurses' job involvement are shown in Table 1. The results of this study showed that none of the standard error variance estimates were negative. Moreover, the standardized error variance ranged between 0.12 and 0.42 ($p < .01$), and the factor loadings of each

observation variable ranged between 0.62 and 0.92 ($p < .01$). Thus, the theoretical model of the factors that contribute to nurses' job involvement proposed in this study satisfied the preliminary fit criteria.

3.2 Overall Model Fit

Bagozzi et al. [21] stated that the "overall model fit" is used to evaluate whether the data fits the theoretical model. According to the overall fit test results shown in Table 2, the chi-square of the overall model fit between the theoretical model and the data was 93.32 ($df = 57$), $n = 338$, and $p = .01$, achieving statistical significance. The samples in this study were obtained from 338 participants, the p value ($p = .01$) was easily affected by the numerous samples, reaching a level of significance. Thus, the overall model should be determined using a GFI test and referencing other indices. Other indices, such as the GFI, adjusted goodness-of-fit index (AGFI), the normal fit index (NFI), and incremental fit index (IFI), were also considered. The results showed that the GFI was 0.95, AGFI was 0.92, NFI was 0.96, and IFI was 0.98. These values all exceeded 0.90. Moreover, the root mean square residual (RMR) was 0.01, and the root mean square error of approximation (RMSEA) was 0.05. The parsimony goodness-of-fit index (PGFI) was 0.62, and the parsimony normal fit index (PNFI) was 0.73; these values indicate that the level of fit was satisfactory. Thus, the model in this study can be used to explain the nurses' caring, self-efficacy and job involvement. In other words, the fit of the model was satisfactory. Generally, the fit indices demonstrated an ideal external quality.

3.3 Fit of the Internal Structure of the Model

Bagozzi et al. [21] described the "fit of internal structure of model" as a method for evaluating whether the internal quality of the observed measurement items or overall structural model satisfied certain criteria. Hair et al. [22] suggested that factor loadings of observed variables greater than 0.70 are superior for individually observed index reliabilities of below 0.50. According to the data presented in Table 3, the reliabilities of the remaining 13 observed variables of the theoretical model ranged between 0.55 and 0.99. Fornell's [23] research concluded that each latent construct's composite reliability must have a value of at least 0.60. The composite reliabilities of caring behaviors, self-efficacy, and job involvement, this model's latent variables, were 0.89, 0.92, and 0.75, respectively. Furthermore, the average variance extracted of this study's latent variables were all greater than 0.50, another requirement proposed by Fornell et al. [24]. The above results showed that the fit of the internal structure of this study's suggested model approaches the standard value. Therefore, having complied with the aforementioned model-fit criteria, this model has been found to be fit and acceptable. Thus, Hypothesis 1 was supported.

3.4 Effects on the Latent Variables of Job Involvement in the Theoretical Model

For this study, caring behaviors and self-efficacy were set as latent independent variables, and job involvement was set as a latent dependent variable in the theoretical model of job involvement. Data shown in Figure.2, the direct effects of caring behaviors and

self-efficacy on job involvement were 0.69, 0.59, and -0.10, respectively.

4 Labels of Figures and Tables

Table 1: Analysis of the preliminary fit of the theoretical model for nurses' Job involvement (n = 338)

Evaluation items	Analysis results	Evaluation results
Were there any negative error variances	Standardized error variances were between 0.12–0.42	Yes
Did error variances reach significant levels?	Reached 0.01 significance level (t > 1.96)	Yes
Were the related absolute values among the parameters close to 1?	Only one maximum absolute value among the parameters was 0.92	Yes
Were factor loadings between 0.50–0.95?	factor loadings were between 0.62–0.92	Acceptable

Table 2: Model evaluation measures of the overall model fit (n = 338)

Evaluation items	Evaluation results	Analysis results
Did chi-square not reach significance (p > 0.01)?	$X^2 = 93.32, p = 0.01$	No
Was chi-square/df < 3.00?	Chi-square/df = 1.67	Yes
Was GFI > 0.90?	0.95	Yes
Was AGFI > 0.90?	0.92	Yes
Was NFI > 0.90?	0.96	Yes
Was IFI > 0.90?	0.98	Yes
Was RMR < 0.05?	0.01	Yes
Was RMSEA < 0.10?	0.05	Yes
Was PGFI > 0.50?	0.62	Yes
Was PNFI > 0.50?	0.73	Yes

Table 3: Individual item reliability, composite reliability, and average variance extracted from latent variables (n = 338)

Latent variables	Composite reliability of latent variables	Average variance extracted from latent variables	Observation variables	Individual Item reliability of observation variables	Factor loadings of observation variables
Caring behaviors	0.89	0.59	accessible	0.55	0.70
			explains and facilitates	0.56	0.75
			comfort	0.57	0.77
			anticipates	0.57	0.76
			trusting relationship	0.75	0.84
			monitors and follows through	0.73	0.83
Self-efficacy	0.92	0.70	collaboration	0.55	0.73
			negotiation	0.62	0.78
			empowerment	0.68	0.81
			planning	0.80	0.88
			capability	0.86	0.92
Job involvement	0.75	0.62	work performance	0.99	0.91
			attitude	0.58	0.62

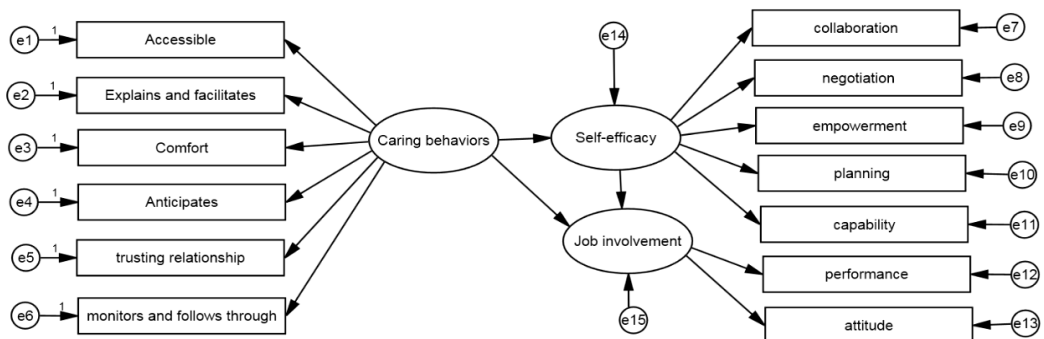


Figure 1

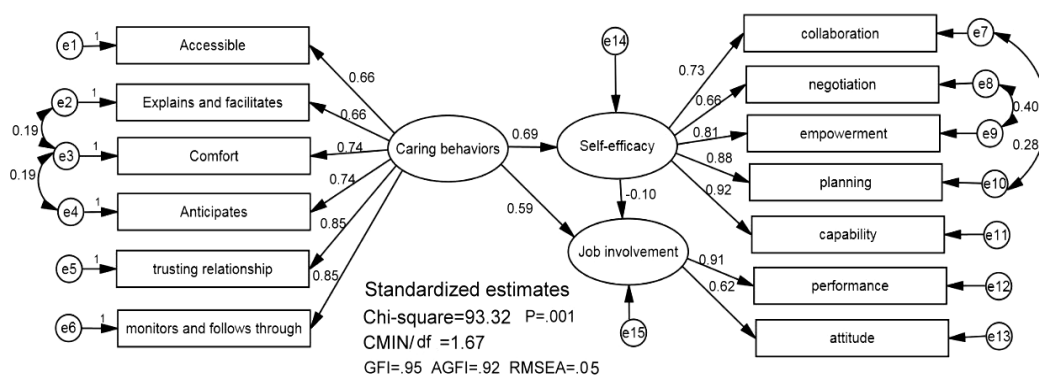


Figure 2

5 Conclusion

This study showed that nurses' caring, self-efficacy and job involvement behaviors were not altered in any meaningful way by said nurses' demographic characteristics. This finding coincides with other research that previously found that age, educational achievement, marital status, and working years of participants did not reveal any significant statistical differences regarding their perceived caring, self-efficacy or job involvement [11].

The results of this study show that caring behaviors are positive and significantly directly related to self-efficacy ($\lambda = .69, t = 10.61, p < .05$). Nurse who perceived themselves as caring have high levels of self efficacy. Caring and self efficacy processes lead to nurse care outcomes, which include increased productivity, patient safety, and quality patient care. This result that caring behaviors increases nurses' competence and self-efficacy supports the findings reported by Huddleston [25]; that is, a health work environment occurs when nurses are valued and treated with a strong sense of caring, nurses with an increase in caring in workplace are more fostered of a feeling autonomy and self efficacy. Furthermore, the findings of this study showed that caring behaviors exert a positively and significant direct effect on job involvement ($\lambda = .59, t = 6.19, p < .05$). In other words, the more caring behaviors, the higher nurses' job involvement. The findings of this result were consistent with a study of 450 nurses conducted in Taiwan showed that caring behaviors possess a statistically significant correlation to organizational commitment and job involvement [26]. Currently, Taiwan's nursing environment is facing workforce shortages and high workloads, which deprives nurses of the time and energy necessary to care for patients. In this study, 36% of the nurses perceived extremely high work pressure in their work environment, which could be the impact factor that nurses cannot optimize their caring qualities in this working environment, and therefore, they are unsatisfied with their work performance and had low job involvement.

The results of this study also indicated that self-efficacy was not significantly related to job involvement ($\lambda = -.10, t = -0.98$). This finding was inconsistent with Yang et al. [27] who surveyed 419 Taiwanese nursing teachers and found self efficacy and job involvement were significantly positively correlated. They emphasized that if nursing teachers had greater self efficacy in their care, they might exhibit higher work

performance and job involvement. A possible reason for differences is that the medical system in Taiwan is physician-centered; the professional competence and autonomy of nurses tend not to be recognized and appreciated by medical teams or patients. Therefore, the participants in this study recognized that self efficacy was not a positive critical work-related factor associated with intent to stay in the profession.

A trust relationship ($\lambda = .85, t = 13.49, p < .05$) is the most crucial factor for developing caring behavior, followed by monitoring and following through ($\lambda = .85, t = 13.33, p < .05$). The importance of explaining and facilitating ($\lambda = .66, t = 11.20, p < .05$) and accessibility ($\lambda = .66, t = 12.54, p < .05$) are comparatively low. The results showed that to improve nurses' caring behavior, the key factors of trust relationships and monitoring and following through must be emphasized. Typically, nurses are the health care team members most intimately involved in patients' lives. Thus, the practice of caring behaviors necessitates trust and trustworthiness. This finding was consistent with that reported by Dinc et al. [28], who asserted that caring behavior requires nurses to establish trust relationships with patients and to be trustworthy professionals. The study participants perceived that "monitoring and follow through" abilities provide nurses with an awareness of patient needs during nursing care and enable them to validate the effect that their intended caring behavior has on patients. Zamanzadeh et al. [29] recruited 40 Iranian nurses to rank the order of importance of caring and indicated that "monitoring and following through" was the most importance ability of caring behaviors.

Among the factors of self-efficacy, capability ($\lambda = .92, t = 24.36, p < .05$) is the most crucial, followed by planning ($\lambda = .88, t = 23.80, p < .05$). Collaboration ($\lambda = .73, t = 16.36, p < .05$) and negotiation ($\lambda = .66, t = 18.77, p < .05$) are of relatively less importance. These results indicate that capability performance is the key factor for improving nurses' self-efficacy. Meigan [30] searched 41 articles to analyze the concept of self efficacy and observed that individuals with high levels of self-efficacy perceived increased capability. The results of this study showed that work performance ($\lambda = .91, t = 19.49, p < .05$) is the most crucial factor of job involvement. This finding indicated that to improve nurses' job involvement, their work performance must be emphasized. This result is consistent with that reported by Alev et al. [31]. They found that job involvement was affected by work performance; thus, increases in nurses' work performance might contribute to achieving the desired level of job involvement.

Limitations are apparent in the sampling and methodology of this study. First, the investigation was conducted with a sample of nurses who were employed at a hospital in southern Taiwan. Future research should be conducted on nurses employed in various regions of Taiwan to test the factors in the model that affect job involvement, as proposed by researchers. Second, this was a cross-sectional study that did not test the direction of causality. Future studies should adopt a longitudinal research design to understand how caring behaviors and self-efficacy change over time, and how job involvement develops as a factor in the model. Finally, the use of self-report questionnaires might have introduced response biases, which must be considered when interpreting the findings.

This study, together with the international body evidence, suggests that investing in improving caring is a key strategy to increase job involvement and retain nurses. Although the results of this study indicated that self-efficacy was not significantly related to job involvement, it contributes to nurses' confidence and affects their work performance behaviors. Thus, self-efficacy can be used as a screening variable when predicting job involvement. Nurses who perceive that their caring behaviors are recognized and rewarded are more likely to be involved in their workplace. The results of

this study are particularly salient for hospital managers, who should create an appealing workplace by promoting caring behaviors and providing nurses with support, thereby fostering greater caring behaviors and enabling nurses to invest in job involvement. These conditions can also play a crucial role in alleviating the impending nurse shortage by increasing the job involvement of nurses in Taiwan's current health care system and attracting newcomers to the nursing profession, thereby ensuring that sufficient nurses will be available in the future to provide high-quality patient care.

Considering the current nurse shortage, the impact of nurses leaving the profession is substantial and increases the burden on Taiwan's health care system. From a nurse managers' perspective, understanding the caring behaviors and self-efficacy of nursing personnel can benefit efforts to increase job involvement and retention. Therefore, providing support and adequate training to cultivate the relevant skills and develop superior caring behaviors is essential for increasing nurses' job involvement.

ACKNOWLEDGEMENTS: The authors wish to express appreciation for the participants and Tainan Municipal Hospital in Taiwan.

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