

# Reliability and Validity of Nurses' Job Satisfaction Scale and Nurses' Professional Commitment

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**Purpose.** The purpose of this study was to evaluate the reliability and validity of two instruments designed to measure job satisfaction among nurses.

**Methods.** The participants comprised 360 nurses from two hospitals. The two instruments, the Nurses' Job Satisfaction Scale (NJSS) and the Nurses' Professional Commitment Scale (NPCS), were developed based on literature review and clinical experience to assess job satisfaction and professional commitment among nurses. The validity of each instrument was determined by measuring the content validity, construct validity, criterion validity and concurrent validity. Internal consistency reliability and test-retest reliability were also examined to estimate the stability of the scales.

**Results.** The final version of the NJSS showed good internal consistency reliability (Cronbach's alpha = 0.92) and test-retest reliability (Pearson's correlation = 0.74). The construct validity of the NJSS was evaluated by factor analysis and four factors were revealed: relationship, benefit and promotion, job environment, and workload. Each item's discriminate power was over 0.9. The internal consistency reliability of the NPCS had a Cronbach's coefficient level of 0.91. Correlation of NPCS test-retest reliability was 0.91. The NPCS consists of three factors with 19 items: nursing professional compliance, involvement of nursing professionals and retention of nursing professionals. Each item's discriminate power was over 0.9.

**Conclusion.** The NJSS and NPCS are valid and reliable instruments for evaluating nurses' job satisfaction and professional commitment in Taiwan. ( *Mid Taiwan J Med* 2007;12:65-75 )

## Key words

hospital nurse, psychometric testing, questionnaire development, nurse job satisfaction, nurse professional commitment

## INTRODUCTION

The turnover rate among novice nurses in Taiwan was 30% in 2005, compared with a turnover of just 10% ten years earlier [1]. Some studies showed that the turnover rate among nurses is as high as 50% during the first six-months [2] and 22% during the first year of service [3]. The consequences of nurse turnover include reduced quality of care, poor patient care outcomes, poor team building, diminished work

performance, and increased medical costs [4-6]. Previous studies have demonstrated a significant relationship between job satisfaction, professional commitment, and turnover [7-9]. A better understanding of nurses' job satisfaction and professional commitment will aid hospital administrators retain their nursing staff. This study aimed to develop appropriate instruments for assessing and understanding job satisfaction and professional commitment among nurses in Taiwan.

## Job satisfaction

Many studies have revealed that job satisfaction is an important predictor of job

Received : 4 December 2006.

Revised : 24 January 2007.

Accepted : 7 March 2007.

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turnover [10,11]. Scholars have defined job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experience [12]. Studies have shown that job dissatisfaction is related to work burnout, high turnover rate, poor job performance, and low quality of patient care [10,12-15]. Those studies found that nurses who reported higher levels of job satisfaction also reported a greater commitment to their job and were more likely to remain in their institution.

Many questionnaires have been developed, based on various theories, to measure job satisfaction among nurses [16-22]. The majority of them used three or more of the following domains to determine and measure job satisfaction: work content, autonomy, personal growth/development, financial rewards, promotion, supervision, communication, co-workers, meaningfulness, workload and work demand [16,18,19,22]. Most of the questionnaires were shown to be reliable and valid; however, very few of them have been constructed to measure job satisfaction among nurses in Taiwan. Job satisfaction is influenced by the culture to which people adhere; [23] therefore, an appropriate measurement of job satisfaction among nurses in Taiwan should be developed with domains that take into account the culture and values of nurses in that country.

### **Professional commitment**

Commitment has been defined as a strong belief in and acceptance of professional values, a willingness to exert considerable effort on behalf of the profession, and a definite desire to be professional [24]. Researchers have reported that the concepts of professional commitment include professional concern, involvement, loyalty, relationships, recognition, beliefs, ethics, internal satisfaction, professional growth, and job involvement [24-26]. Porter et al have found that employees who had higher levels of professional commitment showed better job performance, job satisfaction and productivity, and lower levels of absenteeism and tardiness [24]. Those

components of nurses' professional commitment among nurses in Taiwan should be explored and a suitable instrument for measuring nurses' professional commitment should be developed.

Although many studies of nurses' professional commitment and job satisfaction have been conducted in Taiwan [26-29], some of the instruments lacked validity and reliability [27,28], and some did not incorporate cultural matters intrinsic to Taiwan [26,29]. Furthermore, the instrument most commonly used to measure nurses' professional commitment in Taiwan was developed from the viewpoints of student nurses [30,31]. The purpose of this study is to develop a valid and reliable instrument that measures nurses' job satisfaction and professional commitment. We believe that once the related factors have been clearly identified, effective strategies can be implemented to satisfy, motivate and retain quality-nursing staff.

## **SUBJECTS AND METHODS**

### **Study subjects**

The sample comprised 363 nurses from two hospitals. All of the participants had to have been full time nurses at that hospital for at least six months. Questionnaires which measured job satisfaction and professional commitment were administered to all of the 363 nurses included in the study. Three participants did not complete the questionnaires and were excluded from the study. The final sample size was 360 participants. The nurses ranged in age from 20 to 51 years with an average age of 27.6 years (SD = 4.70). All of the participants were female. A total of 261 (73%) nurses were single, and 256 (70%) nurses held associate degrees. The average duration of work experience was 5.92 years (SD = 4.27). For test-retest reliability, 20 nurses were retested within 2 weeks after the first test.

### **Measurement**

The two questionnaires used in this study were developed by the researchers after a systematic review of the literature [16,18-22,24,25,32]. The questionnaires have been titled the Nurses' Job Satisfaction Scale (NJSS) and the

Nurses' Professional Commitment Scale (NPCS).

**Nurses' job satisfaction scale (NJSS).** In the NJSS, nurses were asked to answer 21 job satisfaction-related questions. The questions were scored on a 5-point Likert scale ranging from 1 point (very dissatisfied) to 5 points (very satisfied). The total score ranged from 21 (lowest job satisfaction) to 105 (highest job satisfaction). The NJSS comprised the five domains most commonly used in the literature: job environment (S1-S3), human relationship (S4-S7), feedback (S8-S10), benefit and promotion (S11-S15), and workload (S16-S21) [7,16,18-23,26,28,32]. The items are shown in Table 1.

**Nurses' professional commitment scale (NPCS).** The NPCS measured 26 questions scored on a 5-point Likert scale ranging from 1 point (strongly disagree) to 5 points (strongly agree). The total score ranged from 21 (lowest professional commitment) to 105 (highest professional commitment). From a systematic

review of the literature [7-9,24-26,28,30-32], the items were established and scale was composed of five domains: understanding of nursing (C1-C6), nursing compliance (C7-C10), involvement of nursing professionals (C11-C16), devotion to nursing (C17-C21) and retention of nursing professionals (C22-C26) (Table 2).

**Item analysis.** Items were eliminated based on item analysis. Discriminatory power determined the discriminating function of each item. There are three steps in calculating the discriminatory power for each item. First, an overall score for a respondent's answers is computed by adding the points of all items within a scale. Then, the mean score for each item is calculated for individuals whose overall score is in the first quartile (Means<sub>25%</sub>) and for individuals whose overall score is in the last quartile (Means<sub>75%</sub>). Finally, the discriminatory power for each item is calculated by subtracting the mean scores in the first quartile (Means<sub>25%</sub>) from the

**Table 1. Discriminatory power of 21 items for job satisfaction**

Variables	Mean $\pm$ SD	Discriminatory power
Domain JS1: job environment		
S1 The renovation of instrument in my unit, I feel	3.03 $\pm$ 0.69	0.90
S2 The supply condition in my unit, I feel	3.26 $\pm$ 0.73	1.22
S3 The environment security in my unit, I feel	3.27 $\pm$ 0.70	1.17
Domain JS2: human relationship		
S4 The group cooperation in my unit, I feel	3.63 $\pm$ 0.71	1.30
S5 Cooperation with other units in my unit, I feel	3.48 $\pm$ 0.67	1.15
S6 Getting along with my direct manager in the my unit, I feel	3.47 $\pm$ 0.78	1.37
S7 The working climate in my unit, I feel	3.51 $\pm$ 0.77	1.45
Domain JS3: feedback		
S8 The work devotion of my nursing colleagues, I feel	3.36 $\pm$ 0.70	1.29
S9 The affirmation of nursing role from other health professionals' viewpoint, I feel	3.27 $\pm$ 0.76	1.36
S10 The patients' viewpoint of nursing, I feel	3.34 $\pm$ 0.69	1.24
Domain JS4: benefit and promotion		
S11 The welfare system in my hospital, I feel	3.00 $\pm$ 0.80	1.34
S12 The promotion system in my hospital, I feel	2.91 $\pm$ 0.72	1.36
S13 The equity of the promoting system in my hospital, I feel	2.85 $\pm$ 0.77	1.51
S14 The pursuing personal development in my hospital, I feel	2.80 $\pm$ 0.79	1.55
S15 The equity of the pursuing personal development in my hospital, I feel	2.81 $\pm$ 0.81	1.68
S20 The on-the-job training meets my needs, I feel	3.00 $\pm$ 0.72	1.12
Domain JS5: workload		
S16 My working loading, I feel	2.53 $\pm$ 0.91	1.76
S17 The over-time condition of my work, I feel	2.47 $\pm$ 0.92	1.69
S18 The support from my head nurse, I feel	3.21 $\pm$ 0.89	1.38
S19 The arrangement of work rotation in my unit, I feel	3.12 $\pm$ 0.82	1.34
S21 The situation that I have to complete my work at home, I feel	2.61 $\pm$ 0.85	1.29

**Table 2. Correlative matrix of factors of nurses' job satisfaction**

Factors	Factor JS1 relationship	Factor JS2 benefit & promotion	Factor JS3 job environment	Factor JS4 workload	Total
Factor JS1 relationship	0.90				
Factor JS2 benefit & promotion	0.44	0.93			
Factor JS3 Job environment	0.47	0.51	0.77		
Factor JS4 workload	0.35	0.57	0.31	0.78	
Total	0.80	0.83	0.68	0.69	0.91
Question C22	0.55	0.55	0.46	0.54	

**Table 3. Factor analysis of job satisfaction by varimax rotation**

Variables	Factor JS1	Factor JS2	Factor JS3	Factor JS4	Communality
S7	0.84	0.20	0.11	0.14	0.76
S8	0.84	0.11	0.09	0.06	0.73
S4	0.81	0.11	0.02	0.02	0.68
S5	0.71	0.06	0.24	0.13	0.58
S9	0.71	0.18	0.17	0.25	0.62
S10	0.68	0.13	0.07	0.12	0.50
S6	0.67	0.27	0.24	0.02	0.58
S13	0.23	0.87	0.13	0.17	0.85
S14	0.15	0.86	0.17	0.20	0.83
S15	0.16	0.86	0.18	0.16	0.83
S12	0.23	0.83	0.17	0.23	0.83
S11	0.13	0.71	0.24	0.23	0.63
S1	0.02	0.26	0.77	0.01	0.66
S3	0.35	0.16	0.76	0.15	0.75
S2	0.27	0.22	0.75	0.06	0.69
S21	0.06	0.14	-0.01	0.80	0.66
S17	0.16	0.29	0.10	0.79	0.75
S16	0.18	0.41	0.15	0.71	0.73
Eigenvalue	4.42	4.02	2.11	2.10	

mean scores in the last quartile (Means<sub>75%</sub>) [33]. Items with a higher discriminatory power index indicate that those items have a higher level of distinguishing the differences among responses. In this study, we eliminated items with a discriminatory power index lower than 0.9 [34].

Item-total correlation index was calculated to determine how each item related to the other items. Item-total correlation was tested by a corrected item to total items' correlation. A correlation index higher than 0.3 has been suggested to indicate that the single item has good correlation within the domain.

**Validity.** Validity is the degree of confidence that the measure being used adequately captures the intended phenomenon of interest. There are many approaches to assess validity, such as face validity, discriminant validity, construct validity, and concurrent

validity [35]. In this study, we chose the face validity method; a total of three experts judged the facets that constituted the domains of interest in the measurement. The questionnaires were then modified according to their suggestions.

We used discriminant validity to compare the correlation of each item within its own domain (intra-factor) with the correlation of each item with other domains (inter-factor). An item with good discriminant validity is defined as an item with higher correlation within its own domain than other domains.

Construct validity is a technique to assess agreement between hypothetical factors that make up the measure and the scales designed to assess those factors. In other words, construct validity reflects the ability of an instrument to measure an abstract concept or construct [34]. Construct validity is usually measured by factor analysis.

Factor analysis is the most commonly used analytic technique for data reduction and refining constructs. Principal component analysis with orthogonal rotation is the most frequently reported factoring method. Criteria for extraction include (a) eigenvalues greater than 1.0, (b) satisfying the scree test, (c) factors which account for at least 5% of the variance, (d) factor loading of  $> 0.40$ , and (e) the presence of theoretical rationale to support the result of cross loadings [35].

Concurrent validity is one kind of criterion-related validity. Concurrent validity measures the consistency of responses of the participant by using different measurements or criteria at the same time. In this study, Question S22 "Overall, from your work, you feel...", served as the criterion in evaluating job satisfaction among nurses. A good concurrent validity was determined by a high correlation between Question 22 and all items.

**Reliability.** Reliability refers to the consistency with which an instrument measures a characteristic. Instruments need to be tested for the reliability and stability of internal consistency overtime. The underlying hypothesis is that, if items of an instrument measure the same concept, they should respond in a consistent manner. Cronbach's alpha coefficients were calculated for each of the domain scores from all participants to measure the internal consistency of the scales. Cronbach's alpha coefficients greater than 0.70 are usually considered satisfactory for group comparisons [34]. Test-retest reliability was evaluated by correlation statistics to measure the instruments' stability overtime. The correlation between each test given at different times was determined based on the Pearson's correlation coefficient.

The study was approved by the Institutional Research Board of the China Medical University Hospital. All participants were assured that anonymity and confidentiality would be maintained. Informed consent forms, along with the two instruments were mailed to the 363 randomly selected nurses. A return, postage-paid envelope was included in the packet.

## RESULTS

### The nurses' job satisfaction scale (NJSS)

**Face Validity.** Face validity of the NJSS was documented by an expert panel. The original NJSS consisted of 15 items broken down into five domains: work environment (2 items), human relationship (4 items), feedback (2 items), benefit and promotion (3 items), and workload (4 items). The number of items was increased from 15 to 21 based on the experts' suggestions. The final instrument comprised 21 items categorized into five domains: work environment (3 items: S1-S3), human relationship (4 items: S4-S7), feedback (3 items: S8-S10), benefit and promotion (6 items: S11-S15), and workload (5 items: S16-S21).

**Item analysis.** Item analysis was used to eliminate items that did not have good correlation within the scale. The item-total correlation coefficients of all 21 items (range from 0.60 to 0.72) were higher than the 0.30 item-total correlation criterion. The discriminatory power level of all items was greater than 0.90, which indicated that each item has a discriminating function. (Table 1)

**Construct Validity.** Four factors of the NJSS were structured according to the criteria of principal component analysis. Eighteen items had eigenvalues greater than 1 and item loadings over 0.40 and therefore were selected [35]. The majority of item loadings were between 0.67 and 0.87, which is considered very good to excellent. Items with factor loadings less than 0.40 and those that cross-loaded on several factors were deleted. Three items (S18, C19, C20) were deleted because they did not meet the criteria. The selected items were formed into four factors. Factor JS1 was entitled relationship and included 7 items (S4-S10) that combined two domains: 4 items initially from human relationship (S4-S7) and 3 items initially from feedback (S8-S10). Factor JS2 was called benefit and promotion and included 5 items (S11-S15). Factor JS3 was called job environment and comprised 3 items (S1-S3). Factor JS4 was entitled Workload and consisted of 3 items (S16, S17, S21). The final instrument consisted of 18 items (Table 3).

**Discriminant validity.** Table 3 shows the correlation of items between intra-factors and inter-factors. The correlation coefficients of each item in four intra-factors were over 0.7, which is greater than the correlation of each item in other inter-factors. The result indicated that each item had discriminant validity in this instrument.

**Concurrent validity.** Question C22 "Overall, from your work, you feel", served as the criterion of job satisfaction. The correlation between all scales and item C22 ranged from 0.46 to 0.55, indicating a moderate level of concurrent validity.

**Reliability.** Internal consistency reliability was assessed by Cronbach's alpha correlation coefficients. The Cronbach's alpha level of total scores was 0.92 and Cronbach's alpha level of the four subscales ranged from 0.77 to 0.93,

indicating that all subscales were internally consistent (Table 2). For test-retest reliability, the correlation between each test given at different times was determined based on the Pearson's correlation coefficient. The test-retest reliability of total scores was 0.74.

### The nurses' professional commitment scale (NPCS)

**Face Validity.** Face validity of the NPCS was evaluated by an expert panel. The NPCS comprised 26 items with five domains: understanding of nursing (C1-C6), nursing compliance (C7-C10), involvement of nursing professionals (C11-C16), devotion to the nursing profession (C17-C21) and retention of nursing professionals (C22-C26) (Table 2). The explanations of each item were modified according to the experts' suggestions.

**Table 4. Discriminatory power of 26 items for nurses' professional commitment**

Variables	Mean $\pm$ SD	Discriminatory power
Domain PC1: understanding of nursing		
C1 Nursing work is the most interesting work I have ever done	3.30 $\pm$ 0.95	1.84
C2 It is meaningful to be a nurse	3.85 $\pm$ 0.73	1.36
C3 I would like to be a nurse as lifelong career	3.00 $\pm$ 1.04	2.00
C4 I like to discuss nursing with other people	3.41 $\pm$ 0.84	1.53
C5 I do not feel I am a nursing professional	3.68 $\pm$ 0.88	1.12
C6 It regret having chosen to be a nurse	3.70 $\pm$ 0.92	1.64
Domain PC2: nursing compliance		
C7 I can make my dream come true by doing nursing	3.15 $\pm$ 0.84	1.56
C8 I am proud to tell other people that I am a nurse	3.54 $\pm$ 0.86	1.55
C9 Nursing can contribute to society	4.10 $\pm$ 0.63	0.97
C10 Nursing may increase personal life experience	4.03 $\pm$ 0.63	0.95
Domain PC3: involvement of nursing professionals		
C11 I am concerned about future development of nursing profession	3.81 $\pm$ 0.75	1.32
C12 Nurse have to receive professional training	4.33 $\pm$ 0.64	1.03
C13 I will devote myself to nursing	4.16 $\pm$ 0.60	1.13
C14 I am conscientious about my job	4.28 $\pm$ 0.57	1.15
C15 I think about how to do a good job	4.17 $\pm$ 0.59	1.20
C16 I would try to understand patients' needs to provide appropriate care plans	4.01 $\pm$ 0.58	1.10
Domain PC4: devotion to nursing profession		
C17 I would care patients as my family	4.05 $\pm$ 0.62	1.18
C18 I would do my best to help patient recovering	4.16 $\pm$ 0.57	1.08
C19 I would try my best to enhance patients' self care ability	4.11 $\pm$ 0.53	0.99
C20 I would like to overcome difficulties that I encounter	3.99 $\pm$ 0.61	0.96
C21 I would like to spend extra time promoting the nursing profession	3.59 $\pm$ 0.83	1.33
Domain PC5: retention of nursing professionals		
C22 If I cannot get along with the manager or colleagues, I will quit	3.04 $\pm$ 1.00	1.46
C23 Although there is lack of opportunity for promotion, I will still stay in nursing	3.39 $\pm$ 0.89	1.27
C24 I will change my career to non-nursing job if there is a chance	2.36 $\pm$ 0.88	1.18
C25 I will still stay in nursing even if the salary is not satisfying	3.22 $\pm$ 0.85	1.24
C26 I will still stay in nursing even after I get married	3.34 $\pm$ 0.88	1.43

**Item analysis.** The item-total correlation coefficients of all 26 items (range from 0.5 to 0.7) were higher than the 0.30 item-total correlation criterion. The discriminatory power level of all items was greater than 0.9, indicating that each item has a discriminating function (Table 4).

**Construct Validity.** The construct validity of NPCS was examined through principal components analysis. Nineteen items from the three factors had eigenvalues greater than 1 and item loadings over 0.40, and therefore were selected (Table 5). Seven items (C5, C6, C9, C11, C21, C22, C24) were excluded because they did not meet the criteria. The selected items were formed into three new factors. Factor PC1 comprising items C1-C4, C7, C8, C10, which were initially from the understanding of nursing (C1-C6) and nursing compliance (C7-C10), was

renamed nursing professional compliance. Factor PC2 contained 9 items (C12-C20) initially from the Involvement of nursing professional (C11-C16) and Devotion to the nursing profession (C17-C21), was entitled involvement of nursing professionals. Factor PC3 included 3 items (C23, C25, C26) and was labeled retention of nursing professionals.

**Discriminant validity.** Table 6 shows the correlation of NPCS items between intra-factor and inter-factors. Each item’s correlation within the domain was higher than its correlation with other domains. The result indicated that items within the domain are highly related to each other compared with items of other domains.

**Reliability.** Internal consistency reliability was assessed by the Cronbach’s alpha correlation coefficient. The Cronbach’s alpha coefficient of

**Table 5. Factor analysis of nurses' professional commitment by Varimax rotation**

Variables	Factor JS1	Factor JS2	Factor JS3	Communality
C18	0.87	0.13	0.06	0.78
C19	0.86	0.14	0.05	0.77
C14	0.85	0.14	0.03	0.74
C15	0.80	0.15	0.08	0.68
C17	0.79	0.20	0.13	0.69
C16	0.75	0.17	0.19	0.63
C20	0.69	0.18	0.05	0.53
C13	0.68	0.26	0.05	0.56
C12	0.67	0.16	0.01	0.52
C4	0.12	0.79	0.03	0.65
C7	0.12	0.74	0.21	0.64
C1	0.23	0.74	0.22	0.65
C8	0.25	0.71	0.04	0.61
C2	0.31	0.69	0.15	0.62
C3	0.13	0.65	0.48	0.67
C10	0.43	0.51	0.02	0.46
C25	0.01	0.02	0.77	0.65
C23	0.14	0.23	0.72	0.59
C26	0.15	0.33	0.66	0.60
Eigenvalue	5.99	4.11	2.03	

**Table 6. Correlation of domains among nurses' professional commitment**

Factors	Factor PC1: nursing professional compliance	Factor PC2: involvement of nursing professionals	Factor PC3: retention of nursing professionals	Total
Factor PC1: nursing professional compliance	0.93			
Factor PC2: involvement of nursing professionals	0.51	0.87		
Factor PC3: retention of nursing professionals	0.28	0.48	0.67	
Total	0.78	0.87	0.62	0.91

total scores was 0.91 with four subscale scores ranging from 0.59 to 0.93. This showed that the instrument was internally and consistently structured (Table 6). The test-retest reliability of total scores was 0.91.

## DISCUSSION

### The nurses' job satisfaction scale

The overall average score of the NJSS was 3.06 (SD = 0.51), indicating that the nurses in this study were moderately satisfied with their jobs. Psychometric analysis of the data revealed that four factors, Factor JS1 Relationship, Factor JS2 Benefit and Promotion, JS3 Job Environment, and JS4 Workload, are related to job satisfaction among nurses.

Three items (S18, S19, S20) were excluded from the final NJSS because they did not meet the inclusion criteria. Item S18, "Support from head nurse", did not contain enough information to assess participants' responses. In fact, this item was more related to leadership style than to workload (Domain JS5). Item S19, "The Arrangement of Work Rotation in the Unit", inquired about the nurses' working schedule. Although work rotation has been identified as one of the reasons for nurse turnover and has been shown to be related to nurse job satisfaction in two studies [10,13], item S19 was not statistically significant in this study, and therefore, was excluded. The possible reason is that the question does not contain sufficient information representative for this domain. Item S20, "On-the-job training programs meet my needs", was excluded because the answers to that domain were not clear enough to understand the participants' feelings. It has been suggested that the total number of items within 1 domain should not be less than 3; this is because a single item would not be able to measure a concept [36]. Therefore, questions regarding leadership style (items S18), work rotation (item S19), and continued training (item S20) should be included in a future questionnaire.

Validation of NJSS by factor analysis yielded results as expected. Although some items

in a specific component did not belong to their domain in the initial scales, the outcome of clustered factors can be proven from theoretical reasoning. The Factor JS1 was named Relationship; items were merged from two initial domains, Human Relationship and Feedback. The original domain, Feedback, queried nurses interaction with others; we therefore should have placed that domain into the Human Relationship domain. Factor JS2, Benefit and Promotion, JS3, Job Environment, and JS4, Workload were structured from the initial domain. A similar finding was reported in previous studies in which components for measuring nurses' job satisfaction included interaction, extrinsic reward [22], workload, communication, and promotion [23].

Internal consistency reliability coefficients for NJSS were also acceptable. The Cronbach's alpha coefficient of total scores was 0.92, implying that the instrument was internally and consistently structured. The test-retest reliability of total scores was 0.74, suggesting that the NJSS instrument was consistent overtime.

### The nurses' professional commitment scale

In the NPCS, factor analysis revealed that three factors were significantly related to professional commitment among nurses. The NPCS comprised a total of 19 items. Factor PCI was revealed from the two original domains, understanding of nursing (C1-C6) and nursing compliance (C7-C10). The result was similar to that reported by Porter et al. They reported that employers needed to start with an understanding of the meaning of professional work in order to build a belief in and an acceptance of professional values among employers [24]. Based on this concept, the understanding of nursing would be the basic step toward nursing compliance and cannot be viewed separately. Thus, these two domains were combined and called Factor PC1, Nursing Professional Compliance. The domains of involvement of nursing professionals (C11-C16) and devotion to the nursing professional (C17-C21) were also merged into one factor. The items comprising the two domains queried the



participants' willingness to exert effort on behalf of the profession; therefore, involvement of nursing professionals was named Factor PC2. Factor PC3 was composed of 3 items, which originally assessed the retention of nurses, and was named Retention of Nursing Professionals.

The following seven items were excluded: C5, C6, C9, C11, C21, C22, and C24. Item C5 "I do not feel I am a nursing professional" and Item C6 "I regret having chosen to be a nurse" were excluded because the items were deemed too negative, and possibly confusing to the participants. For instance, nurses may not have been interested in nursing when they enrolled in the nursing profession but they might not consider their decision to have been a mistake. Item C9 "nursing work contributes to society", item C11 "I am concerned about the future development of the nursing profession", and item C21 "I would like to spend extra time promoting the nursing profession" were excluded because the items were considered to be too idealistic. Another reason why these questions were deleted is that all the data were drawn from the same group. A larger and more varied sample is needed for further investigation. Item C22 "If I cannot get along with the manager or colleagues, I will quit" and item C24 "I'll change my career to a non-nursing job if there is a chance" were excluded. The reason is that there are complex rationales for nurses to leave their job. Items C22 and C24 were finally excluded because they were judged not to represent the reasons for nurses to leave their profession.

Overall, our findings support the definition of commitment reported in previous studies; that is "commitment is having a strong belief in and acceptance of the professional values, a willingness to exert considerable effort in the profession, and a definite desire to be professional" [24]. These three stages of commitment were found to be three factors of nurses' professional commitment in our study; they are represented in the questionnaire as Factor PC1: nursing professional compliance, Factor PC2: involvement of nursing professional, and Factors PC3: retention of nursing professional.

Internal consistency reliability coefficients for hypothesized scales were also acceptable.

The Cronbach's alpha coefficient of total scores was 0.91, implying that the instrument was internally and consistently structured. The test-retest reliability of total scores was 0.91, suggesting that the NPCS instrument was consistent overtime.

In conclusion, symmetric testing provided initial support for the validity and reliability of the NJSS and NPCS questionnaires. The authors believe that both instruments can be used by health care institutions to better understand their employees and to provide efficient strategies to motivate and retain nursing staff.

### ACKNOWLEDGMENT

The authors would like to thank the participants who completed the questionnaire and made this study possible. We also sincerely thank the China Medical University, Taiwan, for financially supporting this research (CMU93-NS-01 and CMU94-162).

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# 醫院護理人員工作滿意度和專業承諾量表的信效度測量

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**目的** 本文的研究目的係發展與評值護理人員工作滿意量表與護理人員專業承諾量表的信度與效度。

**方法** 研究對象來自二個醫院360位護理人員，研究工具係由研究群參考文獻發展而得。效度方面共執行內容效度、建構效度、鑑別效度及同時效度等。信度方面則使用內在一致性及再測信度期能獲得較好的穩定性。

**結果** 護理工作滿意度量表工具內在一致性為Cronbach's alpha 0.92，再測信度為0.74。經由建構效度量表呈現四個構面18題，包括人際關係、福利與升遷、工作環境、工作量；每個題目的鑑別效度超過0.9。護理專業承諾量表的內在一致性為Cronbach's alpha 0.91，再測信度為0.91方面，經由建構效度量表呈現三個構面19題：專業認同、專業投入、專業留任；每個題目的鑑別效度超過0.9。

**結論** 本研究發展的二份量表均有很好的信效度，建議健康照護機構使用量表，可以瞭解護理人員的工作滿意度及專業承諾。(中台灣醫誌 2007;12:65-75)

## 關鍵詞

醫院護理人員，測量工具，量表發展，護理工作滿意度，護理專業承諾

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收文日期：2006年12月4日

修改日期：2007年1月24日

接受日期：2007年3月7日