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# 影響台灣護理師及醫師組織承諾的因素： 一個勞動過程的觀點

## Organizational Commitment of Nurses and Doctors in Taiwan: A Labor-Process Perspective \*

張晉芬、盧孳艷、王桂芸、連吉時、梁惠玉

張晉芬  
Chin-fen Chang

中央研究院社會學研究所研究員  
Research Fellow, Institute of Sociology, Academia Sinica

盧孳艷  
Zxy-Yann Jane Lu

康寧大學創新管理學院健康照護管理學系教授兼院長  
Dean and Professor, Department of Health Care Management,  
College of Innovation and Management, University of Kang Ning

王桂芸  
Kwua-Yun Wang

瑞光健康科技公司品管暨研創總監  
Director of Quality Control and Product Innovation, Rui Guang  
Healthcare Group

連吉時  
Gi-Shih Lien

台北市立萬芳醫院內科系主治醫師  
Attending Physician, Department of Internal Medicine, Taipei  
Municipal Wanfang Hospital

梁惠玉  
Hui-Yu Liang

臺北護理健康大學護理系所助理教授  
Assistant Professor, School of Nursing, National Taipei University of  
Nursing and Health Sciences

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## Abstract

Organizational commitment (OC) has been a topic attracting a multitude of studies in social sciences. OC represents an identification with the values and involvement in organizations. Factors affecting OC include organizational characteristics and work factors. Medical workers have complained about their long work hours, too much overtime work, and low pay. This paper adopts a labor-process perspective to examine the effects of labor conditions and subjective evaluation of the worth of work on OC. The data came from a self-administered questionnaire survey to nurses and doctors in three hospitals (two public, and one private) in Taiwan in 2014. There are more than 4,000 valid observations in the analysis. Using structural equation modeling (SEM), the authors find that nurses on average have greater OC than doctors, and medical workers in the two public hospitals have greater OC than those in the private one. Feeling empowered in the labor process and having supportive social relations in the workplace have positive effects on OC for both nurses and doctors. Working in hostile environments such as having been assaulted by patients and colleagues lowers nurses' OC. Overall findings confirm the explanatory power of the labor process factors and indicate the complexity of obtaining labor's consent in the workplace.

Keywords: Nurses, Doctors, Organizational Commitment, Labor Process, Job Empowerment

## 摘要

勞工對組織的承諾或忠誠度在組織心理學、產業心理學、產業社會學、工作與職業、或勞動社會學中是常見的研究課題。承諾反映的是對於組織價值的認同及願意積極表現。近年來台灣的醫護人員屢屢公開抗議勞動條件的惡化與職場的不友善，如：工時過長及暴力事件頻傳，而要求院方改進。本文從勞動過程的角度，分析工作條件與勞動過程中的成就感等因素對醫護人員組織承諾的影響及專業與性別間的差異。使用的資料來自於 2014 年對三家醫院醫護人員的問卷調查。總共回收問卷超過 4,000 份。結構方程模型的分析結果顯示，護理人員的組織承諾高於醫師，公立醫院醫護人員對組織的認同感高於私立醫院。惡劣的勞動條件影響工作滿意度，對醫護人員的組織忠誠度雖也有負面影響，但未達統計上顯著水準。顯示滿意度與組織承諾的形成有不同的解釋架構。護理及醫師均屬於專業人士。在勞動過程中感到工作的意義和成果、可以學習新事務；同仁彼此間、基層與主管之間的社會關係良好，對於提高組織認同有顯著影響。本文也發現，敵意的工作環境，包括曾在職場中受過暴力經驗（包括被同事霸凌），對於護理人員的組織承諾有顯著的負面影響。研究結果證實勞動過程觀點的解釋力及影響勞工組織承諾因素的複雜性。

關鍵詞：護理師、醫師、組織承諾、勞動過程、工作培力

## 1. INTRODUCTION

Organizational commitment (OC) is “the degree of an employee’s identification and involvement in his or her employing organization” (Brief & Aldag, 1980: 210). Occupational and job characteristics, job autonomy and empowerment are found to have positive effects on employees’ OC in various industries (Lincoln & Kalleberg, 1990; Mueller, Boyer, Price & Iverson, 1994). In the era of a global economy, we are witnessing the diminishing accountability of capitalists to employees as workers constantly worry about job stability and wage stagnation, and the proportion of contract workers in the labor force has kept increasing (Sennett, 2000). Can we still find OC among the rank-and-file workers?

Unlike most other jobs, nursing and medicine are considered professional occupations due to the required school diploma, clinical practice, and certification exams. Nursing is viewed as a good job for women, as it pays better than most female-dominant jobs and has job security. Doctors occupy the top positions in the social gradient, with high income and great prestige. However, deteriorating work conditions have triggered constant protests by nurses and labor activists in recent years in Taiwan (The China Post, May 13, 2016; Gettyimages, May 1, 2013; Taipei Times, May 13, 2012, 2016). Nurses’ unions have called for hospital management to cut work hours, reduce the demand for overtime, and raise their pay, and have asked the government to seriously oversee the violations of labor laws by these organizations (Taiwan Nurses Union, 2015), as have doctors’ unions (Central News Agency, September 15, 2013). Taiwan has operated a universal, comprehensive National Health Insurance (NHI) program since 1995. Because of serious financial difficulties, NHI enacted a hospital global budget payment system beginning in 2002 to control healthcare expenses. The changes in reimbursement instigated a series of strategies by hospitals to further reduce expenses including attrition and making greater use of contract and part-time employees. Hospitals are concerned more about key performance indices than workers’ welfare. Studies show increased job stress and negative work perceptions among nurses because of manpower reduction and labor intensity (Chang, See, Chou, Shen & Lin, 2012). The increasing work load but insufficient workforce in hospitals has resulted in medical workers hardly having chances to utilize their entitled days off or holidays.

From the perspective of corporatist control, the workplace is full of conflicts between the management and the working class. The concept of OC contains both work-related assessment and personal feelings and is used as a mechanism to control workers by increasing the “dependency, commitment, and corporate loyalty” among employees (Wallace, 1995: 814). Unlike most jobs focusing on routine and familiar tasks, nursing and medicine work require specific knowledge, skills, and instant judgements in practice. Along the treating and caring process medical workers exercise job autonomy and follow procedures independently from management’s interventions. Being able to save lives and cure patients provides intrinsic satisfaction in their career, more than any other jobs. The paper aims to determine whether the lack of direct managerial control, high level of job empowerment and social relations in the

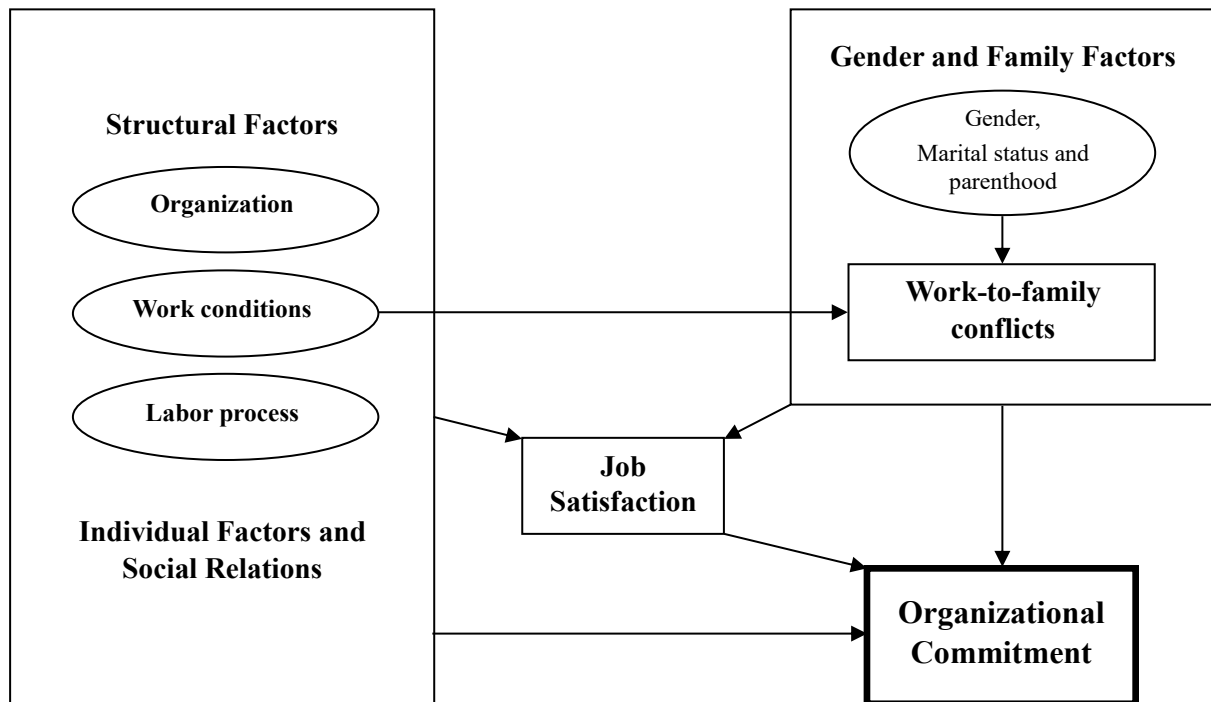
workplace have positive effects on the OC of professional workers such as doctors and nurses.

A few studies have also noted gender differences in OC (Marsden, Kalleberg & Cook, 1993). Hospitals are characterized by occupational segregation, which is affected by profession and by gender. The majority of nurses are women, and most doctors are men. Enjoying high socio-economic status in the medical profession, unlike their married male colleagues, female doctors and nurses being working mothers have to take care of household duties. Extended hours spent in the workplace and irregular shift schedules create work-to-family conflicts for married female medical workers (Skinner, Van Dijk, Elton & Auer, 2011). Bad work conditions can make the balance between work and family even more difficult, which may result in low employee loyalty to the hospitals.

Studies examining OC of Taiwanese nurses find that job characteristics and work units have significant effects on OC (e.g., Chang & Chang, 2007; Chang, Wang, Huang & Wang, 2014). However, concepts of job control, social bonds, and work-and-family conflicts are missing in previous analysis. Also, very few studies examine doctors' OC in Taiwan. The discrepancy between studies of nurses and doctors may be due to the latter's commitment more to their profession than to hospitals. However, as the majority of doctors work in hospitals as employees, their identification with the organization and differences from nurses are worth exploring. This paper uses the results of a self-administered questionnaire survey at three local hospitals to examine OC of nurses and doctors in Taiwan by adopting structural equation modeling (SEM) technique.

## **2. THEORETICAL FRAMEWORK AND HYPOTHESES**

The theoretical framework of our study of OC within hospitals generally follows the previous research done by Lincoln & Kalleberg (1990), Mueller et al. (1994), Marsden et al. (1993), and Tummers & Den Dulk (2013). The factors determining OC are classified into three major dimensions and are listed in Figure 1. One of the three dimensions is structures of organization and work. Another includes gender and family factors. The third one consists of individual factors and social relations. These dimensions are discussed in more detail below.



**Figure 1. Conceptual Framework of Determinants of Nurses' and Doctors' Organizational Commitment**

## 2.1 Structural Factors

Structural factors include two categories: organization and work conditions. The former represents workplace characteristics, while the second one consists of job characteristics, employment status, and labor process.

### 2.1.1 Organization

The first category includes two factors: organizational characteristics and the work units within hospital. The size of organizations has significant effects on workers' commitment (Lincoln & Kalleberg, 1990: 220-223). Mueller et al. (1994) find positive effects of organization size on the loyalty of medical workers to their workplaces. Large organizations usually have more formalized personnel policies and work shift arrangements than small ones. The bureaucratic labor control decreases the extent of manipulation of authority by supervisors, which helps to increase employees' identification with the organization. Larger organizations have greater capacity to provide job stability and opportunities of career development than small ones, which also has positive effects on OC.

*Hypothesis 1: Organizational commitment (OC) of nurses and doctors is higher in large hospitals than medium-sized ones.*

Working in different units may also affect OC of medical personnel. Surgical departments and wards deal with patients with urgent needs or in critical condition. Both nurses and doctors are under more pressure when working in these units than those in internal medicine, other

specialties, and outpatient units. Medical staff working under high labor intensity and great responsibility for treating patients may be less likely to express strong identification with hospitals than those in other units.

*Hypothesis 2: OC of employees is lower in surgical units or emergency rooms than in other units of hospitals.*

### 2.1.2 Work Conditions

Factors representing work conditions are occupations, job characteristics, and work environment. A hospital is one of the workplaces embedded with a clear occupational segregation by gender: most doctors are male and most nurses are female. About 97.1% of nurses are female in Taiwan according to the official statistics.<sup>1</sup> The gendered occupational segregation contains hierarchical power relations in which doctors are viewed as more professional and valuable than nurses. Among different professions, doctors' commitment identifies more with career (Mueller, Wallace & Price, 1992; Kim & Mueller, 2011), while nurses are committed more to hospitals. Doctors belong to professional labor markets and are rewarded more through career development than through opportunities within hospitals.

*Hypothesis 3: Nurses have greater OC than doctors.*

Employment status affects subjective attitudes of medical workers too (Yeh, Ko, Chang & Chen, 2007). Regular workers have greater faith in organizations than those hired as contingent or part-time employees. Having to take rotating shifts increases the difficulties of arranging daily work-and-life schedules and of time together with families. Long work hours and frequent overtime demands have result in much resistance and public demonstrations in Taiwan as described in the last section. Stressful work conditions are expected to decrease employees' commitment to hospitals. And, unlike ordinary employees, the management's interests are more identical with those of organizations and they are more likely to have strong OC.

*Hypothesis 4: Non-regular employment, experiencing poor work conditions, and being ordinary medical workers decrease OC among medical workers.*

Unequal power relations by gender and occupation make nurses easy targets of nonsexual as well as sexual assaults. Violence and sexual harassment against nurses from male doctors, male patients, and patients' family members and friends are prevalent in medical facilities worldwide (Spector, Zhou & Che, 2014). Studies using Taiwanese data have also documented high proportions of nurses experiencing sexual harassment or physical or verbal abuse from male colleagues, patients and visitors (Lin & Hsia, 1999; Chen, Yang, Chen & Yang, 2010). Mueller, De Coster & Estes (2001) studied medical workers in the United States and find a positive relation between OC and the perception of sexual harassment in the workplace. It is expected that experiences of sexual harassment and assaults would affect the loyalty of nurses

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<sup>1</sup> Cited from the website of Taiwan Union of Nurses Association (<http://www.nurse.org.tw/publicUI/H/H10201.aspx?arg=8D6A08A3A24118D077>).

and doctors in hospitals.

*Hypothesis 5: Incidents of sexual harassment and being victims of workplace violence decrease nurses' and doctors' OC.*

### 2.1.3 Labor Process

Another category of structural influences of organizations concerns job fulfillment and rewards, which is also a highlight of the paper. These concepts include empowerment and achievements experienced by workers in practice. The contrasting concept is alienation, representing the loss of control over work processes, a feeling of powerlessness in the organization and meaninglessness of one's work, and experiencing low achievement in one's career (Seeman, 1959; also see different views about using the term by Lincoln and Kalleberg 1990: 27). Alienation differs across industries, and having job autonomy in the labor process decreases the perception of alienation (Blauner, 1964). Generalizing the concept to ordinary workers, Mueller et al. (2001) and Marsden et al. (1993) find a positive effect of job autonomy on OC of medical staff. The lack of job fulfillment, including lack of control in the labor process and doing mostly routine work, discourages nurses' commitment to hospitals (Tummers & Den Dulk, 2013).

Previous studies using Taiwanese data show a relationship between nurses' commitment to hospitals and job control. For instance, Chang et al. (2014) find a strong relationship between work excitement (e.g., perceiving work as challenging) and nurses' professional commitment in a local hospital. In contrast, frustrations with work conditions and manpower arrangements negatively affect nurses' commitment. Feeling empowered and fulfilled in the labor process increases workers' identification with the job and likely the workplace.

*Hypothesis 6: Feeling empowered in the labor process increases OC.*

## 2.2 Gender and Family Factors

Until recently, female labor was not considered a stable workforce in labor markets. Women's job opportunities, career development, and rewards on average were inferior to those of male workers in Taiwan, even though female labor force participation rates kept increasing over time (Chang, 1995, 2014). Married women and working mothers still take the majority of responsibilities of childcare and household duties in dual-earners' families (Chang & Li, 2007). Married women generally experience conflicts between work and family. Gender and family-related factors are expected to affect the perception of the worth of work and commitment to the workplace.

### 2.2.1 Gender, Marital Status and Parenthood

Previous studies note differences in OC between male and female workers. Lincoln & Kalleberg (1990), studying manufacturing workers in Japan and the U.S., find women to have higher OC than men. Marsden et al. (1993) specifically focus on gender effects in studying OC. They argue that since job markets generally are unfriendly for women, female workers appreciate job stability more than males. Also, being self-selected, many women have already

withdrawn from labor markets because of poor pay, hostile work environments, and conflicts between family life and work. Those who remain as paid workers are likely to identify with their jobs as well as organizations. Using American General Social Survey data, Marsden et al. (1993) find that women have higher commitment to their workplace than men.

Becoming a parent increases the need to have a stable job to secure income resources for the family. As men are generally treated as breadwinners in the household, working fathers are expected to show greater OC than working mothers. The authors do not suggest that working mothers do not need to work to feed themselves or families. The hypothesis is made based on traditional gender role attitudes that men are more committed to their career than women. Social expectation may push males to be more committed to their work and organization.

*Hypothesis 7: Female workers have stronger OC than males.*

*Hypothesis 8: But, parenthood increases OC of male workers more than females'.*

### 2.2.2 Work-to-Family Conflicts

In addition to physical and mental stress, hard work conditions cause conflicts with private life, especially for married women or working mothers. As women do most of the household chores and care work regardless of their employment status, a demanding work environment will increase the conflicts between work and family. Work conditions affect the balance between work and family, and all these factors will decrease female medical workers' identification with hospitals, in contrast with males. Work-family conflicts may also affect the OC of female doctors more than that of males.

*Hypothesis 9: Work-family conflicts have negative impacts on OC, and more so for female nurses and doctors than male doctors.*

## 2.3 Individual Background and Social Relations

Personal characteristics also affect worker's OC, such as age, education, work experience, and income level (Mueller et al., 2001). Employees who are older, more educated, and more senior are usually rewarded better (Chang, 2017), and sticking with an organization and showing loyalty benefit them.

*Hypothesis 10: Employees occupying better positions in an organizational hierarchy have higher OC than other employees.*

Working is part of life, and good social relations built upon work and after work increase the quality of public and private life. Social relations include the collegial friendship among employees and tension between the management class and the rank-and-file. Supportive social relations in the workplace reduce potential class conflicts and increase workers' identification with the authority and the goals of the organization. Previous studies find that friendly relations between the management and employees (hierarchical) and among colleagues (horizontal) have positive effects on employees' OC (Marsden et al., 1993; see also Chang & Chang, 2007; Wang & Tsai, 2014).

*Hypothesis 11: The existence of good social relations in vertical or horizontal directions in the workplace increases employees' OC.*

### 3. DATA, METHOD AND VARIABLES

#### 3.1 Data and Method

The data came from a self-administered questionnaire survey given to all nurses and doctors in three hospitals in Taiwan in 2014.<sup>2</sup> The first author and her research assistants personally sent out the questionnaires to the participants on site through the help of hospital staff. We went back several times to collect all the returned questionnaires afterwards. The return rate was 87.2% in one large-sized, public hospital and 70.2% in one medium-sized, private one. These two hospitals are both located in metropolitan areas. In the third hospital, a medium-sized, public one located in a rural area, the return rate was 92.5%.<sup>3</sup> Some of the returned questionnaires were entirely blank or lacked background information of respondents. Several participants marked the same answers for all substantive questions, and in a few cases back-to-back questionnaires had exactly the same answers for all questions including background information. All these questionnaires (58 cases in total from the three hospitals) are treated as invalid and excluded from the analyses. We also exclude male nurses from the analysis, as they occupy only 3% of the nursing staff and are absent in many medical units and wards. Doctors include both females and males, and the former represent nearly 28% in the sample. The total valid sample size is 4,494.

Several variables used in the analysis contain more than one indicator. To analyze both the measurement model and causal effects among variables simultaneously, we adopt the SEM technique. STATA (14.0) is the software package used. We first analyze the determination process of commitment among nurses and doctors respectively to compare effects of the same variables within specific professions. The analysis among doctors includes sex to show gender differences of OC. Then we combine the sample of nurses and doctors together to test differences between gender and occupation.

Chang & Chang (2007) find a significant association between job satisfaction and OC studying Taiwanese medical workers. Marsden et al. (1993) demonstrate the effects of family roles of workers on OC using North American data. To examine the mediating effects of job

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<sup>2</sup> The study project, questionnaire, and the letter of informed consent were reviewed and approved by the institutional review board of each of the three surveyed hospitals. The nurses and doctors fully understood that the participation in the survey was on a voluntary basis, and that they could withdraw from the survey at any time in the process. Anonymity was guaranteed, and no individual information would be revealed to the public. They were aware that only collective results would be presented in publications. None of the coauthors of the paper except the first author ever read the results of each individual questionnaire or had access to questionnaires and data.

<sup>3</sup> The number of returned samples is 3,354 in the large-sized hospital, 798 in the private and medium-sized hospital, and 569 in the public and medium-sized hospital.

satisfaction and work-family conflicts in the determination process of OC, we include these two factors as endogenous variables in the SEM.

### 3.2 Endogenous Variables

The main dependent variable, commitment to the current hospital, is measured on a 5-point Likert scale in the survey: strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2), and strongly disagree (1). It is used as a continuous variable in the model, and high values represent greater OC.

As to the measure of job satisfaction, the original question asked in the survey is the following: *To what extent are you satisfied with your work overall?* The answer options include: Very satisfied (5), satisfied (4), fairly satisfied (3), unsatisfied (2), and very unsatisfied (1). Higher scores represent higher satisfaction.

Two related questions are used to measure work-to-family conflicts: (1) *I have come home from work too tired to do the chores (including taking care of family) which need to be done,* and (2) *It has been difficult for me to fulfill my family responsibilities because of the amount of time I spent on my job.* Both are measured on a 4-point Likert scale: strongly agree, agree, disagree, and strongly disagree. The higher values represent more conflicts between work and family. The loadings of each of these two indicators on the concept of work-to-family conflicts will be decided in SEM analysis, to be discussed below. And both job satisfaction and work-to-family conflicts will be used to predict OC in the model.

### 3.3 Independent Variables

Following the conceptual framework discussed above (Figure 1), independent variables are categorized into three dimensions: structural factors, gender-and-family factors, and personal factors and social relations.

Variables representing organizational structure include type of hospital and working unit within the hospital. The former is measured by size and ownership and consists of three types: large and public, medium-sized and public, and medium-sized and private. Work units are classified into three categories: surgery (including emergency room, critical care medicine, surgical wards, etc.), internal medicine, and others (including other specialties, outpatient department, etc.).

Variables of work conditions include job characteristics and unfriendly work environments. Job characteristics include average weekly regular work hours, job shift (whether having a fixed shift or shift rotations), and frequency of overtime requirements. The original question of the last variables is: *How many times were you requested to work overtime or longer hours by superiors or had to do so due to unexpected factors per month?* The response choices include: never, 1 to 2 times, 3 to 4 times, 5 to 6 times, and 7 times or more. This variable is used as a continuous measure in the analysis. Yeh and her colleagues (2007) find that employment status, that is, being employed as a permanent or temporary worker, is related to different levels of

trust in the workplace. Those in the latter status are less committed than the former. We include a variable to represent whether medical workers surveyed are employed as regular, full-time workers or not in the analysis. A variable measuring the management position in the hospital is included in the analysis, with nurses and doctors who reported being superiors coded as 1 and others as 0.

Workers' subjective evaluations of distributive justice may affect their OC, controlling for earnings. The respondents were asked in the survey: *In your opinion, would it be fair to say that your income matches your ability and working conditions?* It is measured on a 4-point Likert scale: very fair (4), fair (3), unfair (2), and very unfair (1).

Learning about sexual harassment and experiences of being bullied while on duty are two measures representing hostility of the work environment. Medical workers were asked: *Do you know any instances of sexual harassment in language or body against employees at the hospitals that you have ever worked for?* If they never knew of any incidents, the coding is 0, while other responses are coded as 1. As to experiences of being bullied, answer options include never (1), seldom (2), sometimes (3), and often (4). It is used as a continuous variable in the analysis.

Earlier studies, such as Lincoln & Kalleberg (1990), use job autonomy to represent the control power in the labor process. Unlike most other occupations and workplaces, labor practices in hospitals require teamwork and professional judgements and allow for autonomy contingent upon patients and situations. Thus, variables measuring empowerment in the work process might be more valid indicators. We use three questions to represent the concept, including: *Your work allows you to keep learning new things (or skills)*, *You think your work is meaningful*, and *You can see the outcomes of your work*. The first question is measured on a 4-point Likert scale: strongly agree (4), agree (3), disagree (2), and strongly disagree (1). The latter two questions are related to the concept of alienation and both measured on a 5-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree.

Besides gender, family role is included in the analysis. For the last factor, we classify respondents into three categories depending on marital status and parenthood: single and without children, with children regardless of marital status, and married or ever married without children.

As for individual socio-demographic characteristics, we have age, years of education, tenure accumulated in the current hospital, and average monthly earnings (taking the log-value of mid-point for each earnings category in the questionnaire).

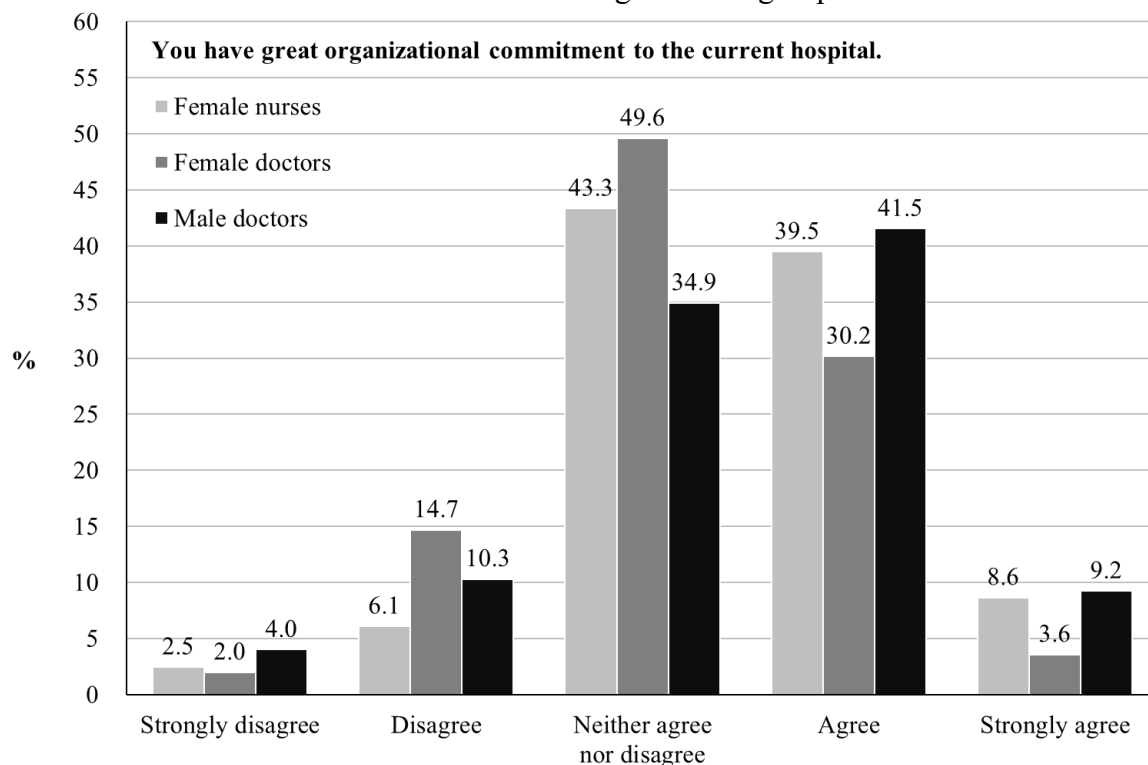
Respondents were asked about the social relations in the hospital in the survey. One of the questions is: *Among colleagues in the hospital, how many of them can be seen as good friends of yours?* The scale includes: most of them, some of them, one or two of them, and hardly anyone. Another related question is: *Except interactions in the workplace, how many times do you get together with colleagues in the hospital?* Answers include: about once a week, about once a month, several times a year, and never or seldom. The third question asks the respondents

to evaluate the relationships between the authority and the subordinates at the hospital: *Relations between management and employees are good in my work place*. It is measured on a 5-point Likert scale: strongly agree (having good relations), agree, neither agree nor disagree, disagree, and strongly disagree. All the three questions measuring social relations are treated as continuous variables, and higher values represent more friends, getting together more often, and having better management-worker relations, respectively.

## 4. FINDINGS

### 4.1 Descriptive Statistics

Figure 2 shows frequency distributions of OC scores of nurses, and female and male doctors, respectively. Nearly one half of female doctors choose not to show their definite attitudes toward OC. About 43% of nurses choose the neutral item and only 35% of male doctors do so. Comparing responses between high and low scores of OC in the bar chart, we find that medical staff have strong identification with their workplace. Male doctors have the highest proportion of showing OC (50.8%), compared to nurses (48.1%) and female doctors (33.7%). As to the negative side, nurses have the lowest proportion of disagreeing or strongly disagreeing with the statement about OC among the three groups (8.5%), lower than male doctors (14.3%) and female doctors (16.7%). In sum, nurses are more likely to support the employed hospital than doctors, and female doctors are the least likely to have the inclination. Views of male doctors are the most diverse among the three groups.



**Figure 2. Distribution of Organizational Commitment Scores among Female Nurses and Doctors of Both Sexes**

Descriptive statistics of independent variables are listed in Table 1. We only discuss some of the results. The majority of surveyed nurses and doctors are satisfied or very satisfied with

their current jobs. The proportion of nurses feeling unsatisfied or very unsatisfied with their jobs (20.7%) is higher than female doctors (16.7%) and male doctors (17.7%). Nurses are more likely to be employed as full-time, regular workers and have to rotate their jobs in different shifts. Average weekly work hours reported by doctors are on average longer than nurses. (Some doctors add the on-call time into work hours in the survey.) Female doctors are more likely to have involuntary overtime work than the other two groups of colleagues. Nurses are more likely to know about sexual harassment incidents at hospitals and to experience physical or verbal assault.

As to personal characteristics and social relations, female doctors have on average shorter tenure than nurses and male doctors at surveyed hospitals. Nurses do not make friends with colleagues as often as doctors do, and seldom get together with colleagues after work. Male doctors have more positive views about the relationships between the superiors and the employees than female colleagues. Male doctors have a significantly higher proportion of being married and/or having children. They are also less likely to indicate being too exhausted due to doing housework.

**Table 1. Descriptive Statistics of Independent Variables**

Unit: % (person)

| Variables   | Female nurses | Female doctors | Male doctors | F-test/<br>$\chi^2$ -test |
|---|---------------|----------------|--------------|---------------------------|
| <b>Individual factors</b>                         |               |                |              |                           |
| Age   | (3,479)       | (247)          | (624)        | 64.5 ***                  |
| Mean  | 34.3          | 33.9           | 38.7         |                           |
| S.D.  | 8.8           | 8.2            | 10.6         |                           |
| Years of schooling                                | (3,546)       | (250)          | (648)        | 3,521.5 ***               |
| Mean  | 15.5          | 19.5           | 20.1         |                           |
| S.D.  | 1.1           | 1.6            | 2.4          |                           |
| Tenure (years)                                    | (3,543)       | (252)          | (646)        | 27.7 ***                  |
| Mean  | 10.1          | 6.1            | 9.1          |                           |
| S.D.  | 8.4           | 7.6            | 9.1          |                           |
| Earnings (per month; TWD)                         | (3,517)       | (241)          | (633)        | 2,551.0 ***               |
| Mean  | 54,680        | 130,394        | 169,842      |                           |
| S.D.  | 16,757        | 63,597         | 87,360       |                           |
| <b>Job satisfaction</b>                           |               |                |              |                           |
| Job satisfaction                                  | (3,525)       | (252)          | (643)        | 20.8 **                   |
| Very unsatisfied                                  | 2.7           | 1.6            | 2.6          |                           |
| Unsatisfied                                       | 18.0          | 15.1           | 15.1         |                           |
| Fairly satisfied                                  | 53.0          | 52.0           | 48.7         |                           |
| Satisfied   | 24.3          | 28.2           | 30.2         |                           |
| Very satisfied                                    | 2.0           | 3.2            | 3.4          |                           |
| <b>Organization</b>                               |               |                |              |                           |
| Work unit   | (3,545)       | (252)          | (649)        | 48.4 ***                  |
| Medical units                                     | 29.1          | 35.3           | 42.1         |                           |
| Surgery units                                     | 51.8          | 50.4           | 44.4         |                           |
| Others  | 19.2          | 14.3           | 13.6         |                           |
| <b>Work conditions</b>                            |               |                |              |                           |
| Regular worker                                    | (3,501)       | (249)          | (637)        | 146.2 ***                 |
| Yes   | 69.4          | 36.9           | 54.6         |                           |
| No  | 30.6          | 63.1           | 45.4         |                           |
| Job shift   | (3,521)       | (246)          | (623)        | 456.7 ***                 |
| Fixed work schedule                               | 26.3          | 66.3           | 63.9         |                           |
| Others  | 73.7          | 33.7           | 36.1         |                           |
| Supervisor  | (3,393)       | (218)          | (572)        | 27.6 ***                  |
| Yes   | 11.0          | 2.3            | 15.4         |                           |
| No  | 89.0          | 97.7           | 84.6         |                           |
| Work hours (excluding overtime)                   | (3,551)       | (252)          | (650)        | 911.5 ***                 |
| Mean  | 42.9          | 58.2           | 60.4         |                           |
| S.D.  | 7.2           | 19.1           | 18.9         |                           |
| Involuntary overtime (per month)                  | (3,454)       | (248)          | (622)        | 6.7                       |
| Never   | 12.0          | 8.9            | 12.5         |                           |
| 1 to 2 times                                      | 22.3          | 22.2           | 20.6         |                           |
| 3 to 4 times                                      | 17.3          | 16.9           | 19.1         |                           |
| 5 to 6 times                                      | 10.3          | 10.9           | 11.9         |                           |
| 7 times or more                                   | 38.2          | 41.1           | 35.9         |                           |
| Match between effort and pay                      | (3,522)       | (250)          | (641)        | 28.3 ***                  |
| Very fair   | 1.5           | .8             | 2.2          |                           |
| Fair  | 54.0          | 52.4           | 43.5         |                           |
| Unfair  | 37.5          | 40.0           | 43.8         |                           |
| Very unfair                                       | 7.0           | 6.8            | 10.5         |                           |
| Aware of sexual harassment at work                | (3,509)       | (251)          | (642)        | 109.2 ***                 |
| No  | 70.4          | 84.1           | 88.8         |                           |
| Yes or not sure                                   | 29.6          | 15.9           | 11.2         |                           |
| Experienced language or physical bullying at work | (3,329)       | (239)          | (616)        | 106.1 ***                 |
| Never   | 28.5          | 46.4           | 44.8         |                           |
| Seldom  | 33.7          | 27.6           | 33.1         |                           |
| Sometimes   | 29.2          | 21.3           | 18.0         |                           |
| Often   | 8.5           | 4.6            | 4.1          |                           |

(to be continued)

**Table 1. Descriptive Statistics of Independent Variables (continued)**

Unit: % (person)

| Variables                                     | Female nurses | Female doctors | Male doctors | F-test/<br>$\chi^2$ -test |
|---|---------------|----------------|--------------|---------------------------|
| <b>Labor process</b>                          |               |                |              |                           |
| Work meaningful                               | (3,550)       | (252)          | (650)        | 28.0 ***                  |
| Strongly agree                                | 21.0          | 17.9           | 27.1         |                           |
| Agree   | 63.0          | 67.9           | 61.5         |                           |
| Neither agree nor disagree                    | 13.5          | 13.1           | 8.2          |                           |
| Disagree                                      | 2.0           | .8             | 2.5          |                           |
| Strongly disagree                             | .5            | .4             | .8           |                           |
| See work outcomes                             | (3,551)       | (252)          | (650)        | 69.5 ***                  |
| Strongly agree                                | 11.5          | 11.1           | 18.3         |                           |
| Agree   | 60.2          | 67.9           | 66.8         |                           |
| Neither agree nor disagree                    | 23.3          | 16.3           | 11.2         |                           |
| Disagree                                      | 4.1           | 4.0            | 2.9          |                           |
| Strongly disagree                             | .9            | .8             | .8           |                           |
| Learn new things                              | (3,529)       | (252)          | (646)        | 79.5 ***                  |
| Strongly agree                                | 22.2          | 36.9           | 35.8         |                           |
| Agree   | 68.0          | 58.3           | 57.6         |                           |
| Disagree                                      | 9.2           | 4.0            | 6.0          |                           |
| Strongly disagree                             | .7            | .8             | .6           |                           |
| <b>Social relations</b>                       |               |                |              |                           |
| Good friends among colleagues                 | (3,528)       | (251)          | (640)        | 50.1 ***                  |
| Hardly anyone                                 | 2.9           | 4.8            | 2.0          |                           |
| One or two of them                            | 20.5          | 13.9           | 12.3         |                           |
| Some of them                                  | 61.0          | 62.9           | 61.7         |                           |
| Most of them                                  | 15.6          | 18.3           | 23.9         |                           |
| Get together with colleagues out of work time | (3,538)       | (252)          | (643)        | 53.0 ***                  |
| Never or seldom                               | 19.6          | 13.1           | 11.0         |                           |
| Several times a year                          | 45.3          | 38.5           | 52.7         |                           |
| About once a month                            | 28.2          | 36.1           | 30.6         |                           |
| About once a week                             | 7.0           | 12.3           | 5.6          |                           |
| Good relationships with administration        | (3,545)       | (251)          | (646)        | 14.7                      |
| Strongly agree                                | 8.8           | 6.4            | 10.5         |                           |
| Agree   | 53.5          | 57.4           | 58.4         |                           |
| Neither agree nor disagree                    | 29.6          | 27.9           | 25.2         |                           |
| Disagree                                      | 6.3           | 6.4            | 4.2          |                           |
| Strongly disagree                             | 1.8           | 2.0            | 1.7          |                           |
| <b>Family factors</b>                         |               |                |              |                           |
| Marital status and parenthood                 | (3,524)       | (251)          | (643)        | 135.7 ***                 |
| Never married and childless                   | 57.3          | 55.4           | 33.7         |                           |
| Having children                               | 35.2          | 30.7           | 52.4         |                           |
| Married (or ever married) and childless       | 7.5           | 13.9           | 13.8         |                           |
| Too tired to do housework                     | (3,535)       | (252)          | (646)        | 56.2 ***                  |
| Strongly agree                                | 31.5          | 28.6           | 22.4         |                           |
| Agree   | 51.0          | 55.2           | 48.6         |                           |
| Disagree                                      | 16.6          | 15.9           | 27.4         |                           |
| Strongly disagree                             | .9            | .4             | 1.5          |                           |
| No time for family                            | (3,534)       | (252)          | (646)        | 12.8 *                    |
| Strongly agree                                | 26.6          | 25.4           | 23.2         |                           |
| Agree   | 49.9          | 57.1           | 50.5         |                           |
| Disagree                                      | 22.2          | 17.5           | 25.1         |                           |
| Strongly disagree                             | 1.2           | .0             | 1.2          |                           |

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The results of SEM for nurses are listed in Table 2 and the results for doctors are listed in Table 3. Table 4 presents the results after combining the two professions in the analysis. The main dependent variable, OC, is used as a continuous variable, and higher scores mean greater commitment to the hospitals. Positive values of regression coefficients represent the variables

which have positive effects on OC. Job satisfaction and work-to-family conflicts are used as mediating variables in the causal path of predicting OC. We will not discuss the results of predicting these two variables, as they are not the focus of the paper.<sup>4</sup>

#### 4.2 Organizational Commitment of Nurses

We first discuss the results of analyzing nurses' responses, presented in Table 2. For the results of the measurement model (top of Table 2), doing meaningful work and being able to see the outcomes of labor are loaded onto the same factor, and the Cronbach's  $\alpha$  is .79. The Cronbach's  $\alpha$  for the two measures of work-to-family conflicts is .86. The test results show a high reliability for both latent variables respectively. The first factor represents job empowerment, and the second represents work-to-family conflicts.

According to the results of the structural model presented in Table 2, nurses in the medium-sized, private hospital have significantly lower OC than those in the large-sized hospital. Commitment scores of nurses in medium-sized, public hospital are also lower than the reference group, but the difference is not statistically significant. Ownership of hospitals matters, and working in a public hospital seem to increase nurses' commitment. The results of size are not significant, failing to support Hypothesis 1. The results of unit differences support Hypothesis 2, as working in an emergency room or surgical department or ward is linked to lower OC among nurses.

As to the results of work conditions, the superiors are more committed to the hospitals than the rank-and-file nurses. However, differing from our expectations, work hours, shift schedule, and overtime work do not have significant effects on OC. Even though news about medical workers protesting against exploitative work conditions has been reported more often than before, nurses in our survey are still committed to the causes of the hospitals. Work conditions, however, have effects on the two mediating variables. Long work hours and unexpected overtime work significantly reduce nurses' satisfaction with their jobs and increase their work-to-family conflicts.

As we expect, feeling empowered and being able to learn new things in the labor process increase nurses' OC significantly. In contrast, hostile work environments have negative effects on nurses' loyalty, especially if they have had experiences of being bullied verbally or physically.

Gender and family factors have no significant effects on OC, though having children increases conflicts between work and family. Social relations in the workplace matter, as we predict. Having more colleagues as friends and the superior and the ordinary medical employees maintaining good relations in the workplace significantly increase OC of nurses. Having lengthy experience in the current hospital increases OC too, as tenure shows significantly positive effects in Table 2

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<sup>4</sup> Variables predicting job satisfaction are the same as those used to determine organizational commitment. Variables affecting work-to-family conflicts are gender, marital status and parenthood, shift schedule, work hours, and the frequencies of overtime work.

**Table 2. Determination of Organizational Commitment (OC) of Nurses:  
Structural Equation Modeling**

You have great organizational commitment to the current hospital. (strongly disagree=1, ~ strongly agree=5)

| <b>(a) Measurement Models (Confirmatory Factor Analyses)</b>                                    |   |  |                |
|---|---|--|----------------|
| <b>Factors and corresponding observed variables</b>   | <b>Factor loadings</b><br>Coefficients (S.E.) | <b>Reliability coefficients</b><br>Cronbach's $\alpha$ |                |
| Factor 1: Job fulfillment<br>→ Work meaningful<br>→ See work outcomes                           | 1.00<br>1.19 (.04) ***                        | .79  |                |
| Factor 2: Work-to-family conflicts (WFC)<br>→ Too tired to do housework<br>→ No time for family | 1.00<br>1.14 (.05) ***                        | .86  |                |
| <b>(b) Structural Models</b>  |   |  |                |
| <b>Independent variables</b>  | <b>Coefficients (S.E.)</b>                    |  |                |
|   | <b>OC</b>                                     | <b>Job satisfaction</b>                                | <b>WFC</b>     |
| Job satisfaction  | .17 (.02) ***                                 | -  | -              |
| <b>Organization</b>   |   |  |                |
| Hospital type (Large, public=0)<br>Medium, private  | -.14 (.04) **                                 | -.05 (.04)   | -              |
| Medium, public  | -.09 (.04)                                    | .03 (.04)  | -              |
| Work unit (Medical units=0)<br>Surgery units  | -.11 (.03) ***                                | -.003 (.02)  | -              |
| Others  | -.01 (.04)                                    | .12 (.04) **   | -              |
| <b>Work conditions</b>  |   |  |                |
| Regular worker  | -.02 (.04)                                    | .02 (.03)  | -              |
| Fixed work schedule   | .02 (.03)                                     | .03 (.03)  | -.17 (.03) *** |
| Supervisor (vs. ordinary employees)   | .15 (.05) **                                  | -.02 (.04)   | -              |
| Work hours (excluding overtime)   | .001 (.002)                                   | -.005 (.002) **  | .01 (.002) *** |
| Involuntary overtime (per month)  | -.01 (.01)                                    | -.03 (.01) ***   | .10 (.01) ***  |
| Match between effort and pay  | .02 (.02)                                     | .43 (.02) ***  | -              |
| Aware of sexual harassment at work  | -.01 (.03)                                    | -.03 (.02)   | -              |
| Experienced language or physical bullying at work   | -.04 (.01) *                                  | -.04 (.01) **  | -              |
| <b>Labor process</b>  |   |  |                |
| Job fulfillment   | .37 (.03) ***                                 | .28 (.03) ***  | -              |
| Learn new things  | .08 (.03) **                                  | .13 (.02) ***  | -              |
| <b>Individual factors</b>   |   |  |                |
| Age   | .003 (.01)                                    | -.02 (.01)   | -              |
| Square of age / 100   | .02 (.02)                                     | .03 (.01)  | -              |
| Years of schooling  | -.002 (.01)                                   | .02 (.01)  | -              |
| Tenure  | .01 (.004) **                                 | .004 (.003)  | -              |
| Earnings (natural log)  | -.002 (.07)                                   | -.04 (.06)   | -              |
| <b>Social relations</b>   |   |  |                |
| Good friends among colleagues   | .05 (.02) *                                   | .01 (.02)  | -              |
| Get together with colleagues out of work time   | -.02 (.02)                                    | .005 (.01)   | -              |
| Good relationships with administration  | .09 (.02) ***                                 | .16 (.01) ***  | -              |
| <b>Gender and family factors</b>  |   |  |                |
| Marital status and parenthood (Never married and childless=0)<br>Having children                | .06 (.03)                                     | .06 (.03) *  | .05 (.03) *    |
| Married (or ever married) and childless   | -.004 (.05)                                   | -.04 (.04)   | .08 (.04)      |
| Work-to-family conflicts (WFC)  | -.004 (.03)                                   | -.22 (.02) ***   | -              |
| Constant term   | 1.97 (.73) **                                 | 1.85 (.61) **  | -              |
| <b>(c) Overall Goodness-of-Fit<sup>a</sup></b>  |   |  |                |
| <b>Sample size and indices of goodness-of-fit</b>   | <b>Values</b>                                 |  |                |
| Sample size   | 2,913   |  |                |
| $\chi^2$  | 569.564 (df=70, p=.000)                       |  |                |
| CFI (comparative fit index)   | .941  |  |                |
| NNFI (non-normed fit index)   | .870  |  |                |
| SRMR (standardized root mean squared residual)  | .026  |  |                |
| RMSEA (root mean squared error of approximation)  | .049  |  |                |

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

<sup>a</sup> Commonly used fit indices: CFI  $\geq .95$ , NNFI  $\geq .95$ , SRMR  $\leq .05$ , RMSEA  $\leq .05$ .

Job satisfaction has significantly positive effects on OC of nurses as expected (shown at the top of column 1). We compare the results of using job satisfaction as the mediating variable with those without including job satisfaction (results are not shown in this paper) and find that the effects of other independent variables on OC are not mediated by job satisfaction. The values of coefficients change little after considering the latter's mediating effects. The comparison of results is also made between treating work-to-family conflicts as the mediating variable or not. The effects of independent variables on OC do not change much after taking the conflict variable out.

The fitness measure (RMSEA, root mean squared error of approximation) is about .049, which represents a good fit of our model (Dattalo, 2013: 125-127). Other indices such as CFI (comparative fit index, .941), NNFI (non-normed fit index, .870), and SRMR (standardized root mean squared residual, .026) generally appear in the acceptable range of goodness-of-fit.

### 4.3 Organizational Commitment of Doctors

Table 3 shows the results of analyzing survey results of doctors in the three hospitals. This model adds sex to differentiate between female and male doctors. In general, there are fewer variables showing significant effects on OC for doctors than nurses. Similar to what we find for nurses, doctors in the medium-sized private hospital have significantly lower OC than those in the large one. Doctors in the medium-sized, public hospital also have lower OC but the results are not significant. Ownerships matters in determining OC of doctors, while differences of medical units are not significant.

Among variables of work conditions, doctors being employed on a full-time, regular basis have greater OC than colleagues on temporary, part-time or subcontracting terms. As in the case of analyzing nurses' responses, long work hours and involuntary overtime increase work-to-family conflicts, but do not affect OC. Gender has no significant effects on OC. Female doctors have significantly stronger job satisfaction but experience greater work-to-family conflicts than males. As expected and similar to what we find for nurses, feeling empowered in their jobs increases doctors' OC. This factor and being able to learn new things also increase doctors' job satisfaction.

The existence of good relations between the management and doctors in hospitals has positive effects on OC. Older doctors are more likely to identify with the current hospital than the younger generations.

As in case of nurses, job satisfaction increases OC for doctors. We also conduct a separate analysis without using job satisfaction as the predicting variable in the equation. The results are similar to what we show in Table 3, which means that the job satisfaction does not mediate the effects of other independent variables on OC. Similar conclusions are obtained when analyzing the equation without including the variable of work-to-family conflicts.

Four measures of goodness-of-fit show the goodness-of-fit of SEM under acceptable values: CFI (.959), NNFI (.909), SRMR (.032), and RMSEA (.045).

**Table 3. Determination of Organizational Commitment (OC) of Doctors:  
Structural Equation Modeling**

You have great organizational commitment to the current hospital. (strongly disagree=1, ~ strongly agree=5)

| <b>(a) Measurement Models (Confirmatory Factor Analyses)</b>                                    |   |  |                |
|---|---|--|----------------|
| <b>Factors and corresponding observed variables</b>   | <b>Factor loadings</b><br>Coefficients (S.E.) | <b>Reliability coefficients</b><br>Cronbach's $\alpha$ |                |
| Factor 1: Job fulfillment<br>→ Work meaningful<br>→ See work outcomes                           | 1.00<br>1.14 (.07) ***                        | .83  |                |
| Factor 2: Work-to-family conflicts (WFC)<br>→ Too tired to do housework<br>→ No time for family | 1.00<br>1.02 (.06) ***                        | .87  |                |
| <b>(b) Structural Models</b>  |   |  |                |
| <b>Independent variables</b>  | <b>Coefficients (S.E.)</b>                    |  |                |
|   | <b>OC</b>                                     | <b>Job satisfaction</b>                                | <b>WFC</b>     |
| Job satisfaction  | .19 (.05) ***                                 | -  | -              |
| <b>Organization</b>   |   |  |                |
| Hospital type (Large, public=0)<br>Medium, private  | -.38 (.10) ***                                | .07 (.07)  | -              |
| Medium, public  | -.06 (.13)                                    | -.18 (.10)   | -              |
| Work unit (Medical units=0)<br>Surgery units  | -.03 (.06)                                    | -.07 (.05)   | -              |
| Others  | .06 (.09)                                     | -.07 (.07)   | -              |
| <b>Work conditions</b>  |   |  |                |
| Regular worker  | .16 (.08) *                                   | -.12 (.06) *   | -              |
| Fixed work schedule   | -.08 (.06)                                    | .05 (.05)  | -.08 (.05)     |
| Supervisor (vs. ordinary employees)   | .05 (.12)                                     | .10 (.09)  | -              |
| Work hours (excluding overtime)   | .002 (.002)                                   | -.004 (.001)   | .01 (.001) *** |
| Involuntary overtime (per month)  | -.02 (.02)                                    | -.02 (.02)   | .15 (.02) ***  |
| Match between effort and pay  | .06 (.05)                                     | .50 (.04) ***  | -              |
| Aware of sexual harassment at work  | .01 (.09)                                     | .12 (.07)  | -              |
| Experienced language or physical bullying at work   | -.07 (.04)                                    | -.06 (.03) *   | -              |
| <b>Labor process</b>  |   |  |                |
| Job fulfillment   | .29 (.07) ***                                 | .19 (.05) ***  | -              |
| Learn new things  | .03 (.06)                                     | .21 (.04) ***  | -              |
| <b>Individual factors</b>   |   |  |                |
| Age   | .07 (.03) *                                   | .04 (.02)  | -              |
| Square of age / 100   | -.04 (.04)                                    | -.03 (.03)   | -              |
| Years of schooling  | .02 (.02)                                     | -.004 (.01)  | -              |
| Tenure  | -.01 (.01)                                    | -.01 (.01)   | -              |
| Earnings (natural log)  | -.07 (.11)                                    | .09 (.08)  | -              |
| <b>Social relations</b>   |   |  |                |
| Good friends among colleagues   | .03 (.05)                                     | .03 (.03)  | -              |
| Get together with colleagues out of work time   | .02 (.04)                                     | .05 (.03)  | -              |
| Good relationships with administration  | .12 (.04) **                                  | .22 (.03) ***  | -              |
| <b>Gender and family factors</b>  |   |  |                |
| Female  | .04 (.07)                                     | .11 (.05) *  | .15 (.06) **   |
| Marital status and parenthood (Never married and childless=0)<br>Having children                | .02 (.09)                                     | -.05 (.07)   | .06 (.06)      |
| Married (or ever married) and childless   | .13 (.09)                                     | -.04 (.07)   | .07 (.07)      |
| Work-to-family conflicts (WFC)  | -.03 (.06)                                    | -.16 (.05) ***   | -              |
| Constant term   | .53 (1.3)                                     | -1.39 (.96)  | -              |
| <b>(c) Overall Goodness-of-Fit<sup>a</sup></b>  |   |  |                |
| <b>Sample size and indices of goodness-of-fit</b>   | <b>Values</b>                                 |  |                |
| Sample size   | 630   |  |                |
| $\chi^2$  | 163.811 (df=72, p=.000)                       |  |                |
| CFI (comparative fit index)   | .959  |  |                |
| NNFI (non-normed fit index)   | .909  |  |                |
| SRMR (standardized root mean squared residual)  | .032  |  |                |
| RMSEA (root mean squared error of approximation)  | .045  |  |                |

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

<sup>a</sup> Commonly used fit indices: CFI  $\geq .95$ , NNFI  $\geq .95$ , SRMR  $\leq .05$ , RMSEA  $\leq .05$ .

#### **4.4 Organizational Commitment of Nurses and Doctors**

The last part of the analysis combines data of nurses and doctors. Results are listed in Table 4. Most of the results are similar to what we find when analyzing data for nurses only. Medical personnel employed in the private hospital, or in a surgical department or in an emergency room have lower OC. Nurses and supervisors are more committed than non-supervisor doctors and ordinary workers, respectively. Experiences of workplace violence have negative effects on OC of the medical workers. Feeling empowered in practices and feeling able to learn new things at work have positive effects on OC. The existence of a friendly social network in the working place helps to increase OC. Senior workers have greater OC than the junior colleagues.

The fitness measures show results very similar to those for the nursing data. RMSEA is about .049, which represents a good fit of our model. Other indices such as CFI (.941), NNFI (.870), and SRMR (.025) all indicate acceptable results of goodness-of-fit.

**Table 4. Determination of Organizational Commitment (OC) of Nurses and Doctors:  
Structural Equation Modeling**

You have great organizational commitment to the current hospital. (strongly disagree=1, ~ strongly agree=5)

| <b>(a) Measurement Models (Confirmatory Factor Analyses)</b>                                    |  |  |                |
|---|--|--|----------------|
| <b>Factors and corresponding observed variables</b>   | <b>Factor loadings<br/>Coefficients (S.E.)</b> | <b>Reliability coefficients<br/>Cronbach's <math>\alpha</math></b> |                |
| Factor 1: Job fulfillment<br>→ Work meaningful<br>→ See work outcomes                           | 1.00<br>1.20 (.04) ***                         | .80  |                |
| Factor 2: Work-to-family conflicts (WFC)<br>→ Too tired to do housework<br>→ No time for family | 1.00<br>1.06 (.04) ***                         | .86  |                |
| <b>(b) Structural Models</b>  |  |  |                |
| <b>Independent variables</b>  | <b>Coefficients (S.E.)</b>                     |  |                |
|   | <b>OC</b>                                      | <b>Job satisfaction</b>  | <b>WFC</b>     |
| Job satisfaction  | .18 (.02) ***                                  | -  | -              |
| <b>Organization</b>   |  |  |                |
| Hospital type (Large, public=0)<br>Medium, private  | -.17 (.04) ***                                 | -.03 (.03)   | -              |
| Medium, public  | -.07 (.04)                                     | -.004 (.03)  | -              |
| Work unit (Medical units=0)<br>Surgery units  | -.10 (.03) ***                                 | -.02 (.02)   | -              |
| Others  | -.001 (.04)                                    | .09 (.03) **   | -              |
| <b>Work conditions</b>  |  |  |                |
| Nurse   | .30 (.08) ***                                  | -.10 (.07)   | -              |
| Regular worker  | .01 (.04)                                      | -.02 (.03)   | -              |
| Fixed work schedule   | -.002 (.03)                                    | .03 (.02)  | -.16 (.02) *** |
| Supervisor (vs. ordinary employees)   | .14 (.04) **                                   | .01 (.04)  | -              |
| Work hours (excluding overtime)   | .001 (.001)                                    | -.002 (.001)   | .01 (.001) *** |
| Involuntary overtime (per month)  | -.01 (.01)                                     | -.03 (.01) ***   | .11 (.01) ***  |
| Match between effort and pay  | .03 (.02)                                      | .44 (.02) ***  | -              |
| Aware of sexual harassment at work  | -.01 (.03)                                     | -.01 (.02)   | -              |
| Experienced language or physical bullying at work   | -.04 (.01) **                                  | -.05 (.01) ***   | -              |
| <b>Labor process</b>  |  |  |                |
| Job fulfillment   | .36 (.03) ***                                  | .26 (.02) ***  | -              |
| Learn new things  | .07 (.02) **                                   | .14 (.02) ***  | -              |
| <b>Individual factors</b>   |  |  |                |
| Age   | .01 (.01)                                      | -.003 (.01)  | -              |
| Square of age / 100   | .01 (.01)                                      | .01 (.01)  | -              |
| Years of schooling  | .01 (.01)                                      | .01 (.01)  | -              |
| Tenure  | .01 (.003) *                                   | .002 (.003)  | -              |
| Earnings (natural log)  | -.02 (.05)                                     | -.03 (.04)   | -              |
| <b>Social relations</b>   |  |  |                |
| Good friends among colleagues   | .04 (.02) *                                    | .02 (.01)  | -              |
| Get together with colleagues out of work time   | -.01 (.02)                                     | .01 (.01)  | -              |
| Good relationships with administration  | .10 (.02) ***                                  | .16 (.01) ***  | -              |
| <b>Gender and family factors</b>  |  |  |                |
| Female  | .05 (.06)                                      | .11 (.05) *  | .23 (.04) ***  |
| Marital status and parenthood (Never married and childless=0)<br>Having children                | .06 (.03)                                      | .03 (.03)  | .05 (.02) *    |
| Married (or ever married) and childless   | .03 (.04)                                      | -.03 (.04)   | .07 (.04)      |
| Work-to-family conflicts (WFC)  | -.01 (.02)                                     | -.21 (.02) ***   | -              |
| Constant term   | 1.38 (.64) *                                   | 1.38 (.53) **  | -              |
| <b>(c) Overall Goodness-of-Fit<sup>a</sup></b>  |  |  |                |
| <b>Sample size and indices of goodness-of-fit</b>   | <b>Values</b>                                  |  |                |
| Sample size   | 3,543  |  |                |
| $\chi^2$  | 705.837 (df=75, p=.000)                        |  |                |
| CFI (comparative fit index)   | .941   |  |                |
| NNFI (non-normed fit index)   | .870   |  |                |
| SRMR (standardized root mean squared residual)  | .025   |  |                |
| RMSEA (root mean squared error of approximation)  | .049   |  |                |

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

<sup>a</sup> Commonly used fit indices: CFI  $\geq .95$ , NNFI  $\geq .95$ , SRMR  $\leq .05$ , RMSEA  $\leq .05$ .

## 5. CONCLUSIONS

People work not only to make a living. Material rewards and good work conditions are important to retain workers and increase job satisfaction. However, obtaining achievements from completing a job or curing patients, feeling empowered from learning updated knowledge or skill, and being able to make friends and maintain rapport among colleagues are all valued by employees too. OC or loyalty to the workplace is not a new subject. Based on previous studies, this paper takes a further step to examine the effects of social and product relations in the labor process on OC. The results presented above provide support of most of our hypotheses.

We find that poor work conditions decrease job satisfaction of nurses and doctors but have no significant effects on OC. Instead, feeling empowered from work and being able to get new knowledge or skills are appreciated and have significant effects on OC of medical workers. Nurses and doctors seem to value the positive sides of their work, and poor work conditions may create resentment but do not necessarily reduce their identification with the causes of hospitals. Due to the limitation of questions being included in one questionnaire, we do not ask respondents about their attitudes toward detailed working conditions, such as work hours, labor intensity, work relations, or the necessity of doing overtime. Future studies may improve upon this by including more attitudinal questions.

Supportive relations both vertically and horizontally make work in hospitals more enduring and produce high commitment for employees. Previous studies (e.g., Lincoln & Kalleberg, 1990) find that friendly work environments encourage workers' commitment. The existence of good relations between employees and the management increases OC for both nurses and doctors in this study too. The question asked about the general atmosphere in the workplace but not respondents' personal relationship with the superiors. For nurses, having more good friends in the workplace has positive effects on OC. However, statistics presented in Table 1 show that nurses are less likely to have colleagues as friends and to engage in after-work activities. Providing more social events to let nurses get to know one another and build friendships should benefit hospitals.

Another variable affecting OC of nurses as well as doctors is types of hospitals. Workers in the medium-sized hospitals (especially the private one) have lower OC than in the large hospital. Ownership of hospitals has significant effects on OC. It is possible that as private hospitals are generally more concerned about making profit and because they lack resources from the state, doctors and nurses may not desire to identify with the values of the organization.

We ran separate structural equations models by taking job satisfaction as the direct, independent variable or as the mediating factor in predicting OC. The results show that job satisfaction has significantly positive effect on OC and does little in mediating the effects of other variables on OC. Thus, these two attitude variables, although related, are distinct concepts in workers' assessment of their perceptions about jobs and organizations. Several variables specified in the conceptual framework do not have significant effects on nurses' and doctors' loyalty as expected, including long hours of work, overtime demand, and shift arrangement.

Long work hours and frequent overtime requests decrease job satisfaction of medical workers but not their identification with the workplace.

Gender and family factors have no significant effects on OC. Parenthood has positive effects on OC, which may signal the effects of family-friendly environments or the expectation of job stability due to financial necessity when having children. The paper also shows that having experiences of being assaulted reduces nurses' OC significantly. Nurses are in an inferior position compared to doctors at both professional and organizational levels. They are thus more vulnerable than doctors to hostile working environments. Hospitals should try hard to reduce incidences of violence through publicly denouncing bullies and violence against medical workers and providing formal punishments and/or charges against the defendant.

There are more than twenty thousand hospitals and clinics and two hundred and twenty thousand nurses and doctors in Taiwan (DGBAS, 2019). It is difficult to choose a representative sample of nurses and doctors among these diverse institutions. However, as the three hospitals surveyed are different in size, ownership and urban/rural differences, the results from analyzing more than four thousand nurses and doctors should have external validity to some extent. The authors hope that future studies using different samples may shed more light on this issue.

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