

## 論文の内容の要旨

論文題目      The Effect of Job Demands, Job Resources, and Off-Job Recovery on Mental and Physical Health among Registered Nurses in Thailand  
(タイの登録看護師の精神的および身体的健康に対する仕事の要求度、仕事の資源、および仕事外のリカバリーの影響)

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### **Background:**

Current research in occupational health has introduced a more comprehensive and innovative model of job stress and work motivation i.e. the Demands-Induced Strain Compensation (DISC) Model (2003), now known as the Demands-Induced Strain Compensation Recovery (DISC-R) Model (2012). The model focuses not only on the ‘match’ among different dimensions of demands and resources, but also the job and off-job characteristics ‘match’ to predict workers’ health. Since its early development, DISC/DISC-R has been used as a job stress and work motivation theoretical research framework in many countries in different occupation groups such as in Australia (police officers), Belgium (consulting, technology, and outsourcing specialized companies and teachers), Italy (Healthcare workers), and the Netherlands (athletes, retail staff, teachers, undergraduate students, and particularly in *human service work* with unique aspects of stress such as *nursing*). There is a growing empirical evidence for the model’s multidimensionality and matching hypothesis, implying the need for job redesign; for example, employers should provide job resources that match job demands available for employees in order to manage job stress effectively (i.e. more emotional job resources for high emotional demanding tasks, more cognitive job resources for more complex cognitive tasks, and physical support for heavy physical work). However, it is unknown if the DISC-R Model can be used in Asian human service workers culture such as nursing in the Thai context.

The aims of this study were twofold: (1) to develop and validate the Thai version of the three existing psychological scales; the Demands-Induced Strain Compensation Questionnaire (DISQ), the Off-Job Detachment: Recovery Questionnaire (DISQ-R), the Utrecht Work Engagement Scale (UWES) and (2) to test the DISC-R Model by evaluating the moderation (interaction) effects of job resources and off-job detachment: recovery on the relationship of job demands and the potential match outcomes in three aspects (i.e. cognitive: work engagement, emotional: emotional exhaustion, and physical: physical symptoms) among registered nurses in Thailand.

### **Methods:**

The DISQ, DISQ-R, and UWES were translated into the Thai language based on an established procedure: forward translation, reconciliation, reverse translation (back-translation), final review and

confirmation by the original developers. Cognitive debriefing was conducted of 5 registered nurses working in Thailand and necessary amendments were made. The pilot study of 20 registered nurses working in Thailand was performed in July 2019 in order to preliminarily test the psychometric properties of the scales. A main cross-sectional survey study was conducted during 7 – 31 August 2019 of registered nurses at Uttaradit Hospital, located in northern part of Thailand. A total of 510 respondents completed and returned the questionnaire. Due to incomplete questionnaires, 3 observations were excluded, resulting in the final sample (N=507) response rate of 86%. The mean age of the respondents was 38.9 years (SD = 10.7). The mean working experience as a registered nurse was 15.2 years (SD = 10.2).

The questionnaires consisted of 3 parts: 1. demographic information, 2. job and off-job characteristics i.e. using DISQ-TH and DISQ-R-TH, and 3. work-related mental and physical health outcomes i.e. work engagement using UWES-TH, emotional exhaustion using the Thai version of emotional exhaustion subscale of Maslach Burnout Inventory: MBI, and physical symptoms using the Thai version of Physical Symptoms: PHQ-15 somatic symptoms checklist.

The completed questionnaires were returned in sealed envelopes to ensure privacy, collected through each department. The objectives and uses of the study were explained to all participants by the information sheet. The participation was by voluntary. Those who agreed to participate in the study signed a written consent agreement. All participants were assured of confidentiality and guaranteed of anonymity. The ethics committee of Graduate School of Medicine, The University of Tokyo in Japan and Uttaradit Hospital in Thailand approved the research procedures before the study began.

To evaluate the psychometric properties of the three newly developed scales, factorial validity was investigated using confirmation factor analysis (CFA), internal consistency was assessed by the calculation of Cronbach's alpha coefficients, and construct validity was confirmed by Pearson's r correlation analysis between the DISQ-TH, DISQ-R-TH, and UWES-TH and the validating variable outcomes i.e. emotional exhaustion and physical symptoms. To evaluate the moderation (interaction) effects of job demands, job resources, and off-job detachment: recovery on mental and physical health outcomes, the moderated multiple regression (MMR) analyses were conducted. The statistical analyses were conducted using Microsoft Excel 2013 for descriptive analyses (i.e. demographic information, item percentage), reliability and validation testing using the R programming language software version 3.6.1 (2019-07-05), Pearson's r correlations and MMR using SPSS version 22.

## **Results:**

### *Development and validation of Thai version of scales (DISQ, DISQ-R, UWES)*

The development and validation study of the three newly developed psychological scales into the Thai version satisfied the psychometric properties criteria. In terms of factor structure, the Demands-Induced Strain Compensation Questionnaire: Thai Version (DISQ-TH) revealed the hypothesized six-factor structure. The Off-Job Detachment: Recovery Questionnaire: Thai Version (DISQ-R-TH) showed the hypothesized three-factor structure. The Utrecht Work Engagement Scale: Thai Version (UWES-TH)

confirmed the hypothesized three-factor with 9 items was better than the 17 items version. For scale's reliability, the internal consistency of each questionnaire satisfied the criteria; Cronbach's alpha of DISQ-TH ranged from 0.67-0.83, DISQ-R-TH ranged from 0.80-0.88, and UWES-TH (short-9-item) ranged from 0.79-0.88.

*Moderation effect of job demands, job resources, and off-job detachment: recovery on mental and physical health*

The results of correlation analyses demonstrated that emotional and physical job demands had a positive relationship with emotional exhaustion and physical symptoms, while cognitive/emotional job resources, cognitive/emotional/physical off-job detachment: recovery, and work engagement had a negative relationship with emotional exhaustion and physical symptoms. Finally, the results of the moderation analysis (interaction effects) from the nine models tested revealed that high physical job resources, regardless of whether the level of "off-job detachment: recovery" was low or high, moderated the relationship of physical job demands on emotional exhaustion. High cognitive job resources combined with high cognitive "off-job detachment: recovery" could reduce the negative impact of cognitive job demands on physical symptoms.

**Conclusion:**

The three newly developed psychological scales (DISQ-TH, DISQ-R-TH, UWES-TH) into the Thai version had acceptable psychometric properties based on the results of their factorial validity, internal consistency, and construct validity. The DISC-R Model could be applied as a job stress and work motivation theoretical research framework in the Thai context. The correlation of DISQ-TH, DISQ-R-TH, UWES-TH and the validating outcomes i.e. emotional exhaustion and physical symptoms was consistent with the author's expectation.

Registered nurses in Thailand faced with emotional and physical job demands leading to emotional exhaustion and physical symptoms. However, registered nurses with cognitive/emotional job resources, cognitive/emotional/physical off-job detachment: recovery, and work engagement might not develop emotional exhaustion and physical symptoms. This study found that the adverse effect of emotional exhaustion could be buffered with sufficient physical resources even without physical off-job detachment: recovery. Finally, although cognitive job demands did not seem to affect physical symptoms directly, the sufficient high level of cognitive job resources combined with high cognitive off-job detachment: recovery was found to reduce the negative impact of cognitive job demands on physical symptoms.

The study highlights the importance of cognitive, emotional, and physical job resources and off-job detachment: recovery, and work engagement to combat job stress. Job redesign can be considered to provide specific job resources available to face the matched job demands. Future research is also needed to understand how job resources, off-job detachment: recovery, and work engagement can be increased.