



Deposited via The University of Leeds.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/209358/>

Version: Accepted Version

---

**Article:**

Song, Y., Wang, Z. and Song, L.J. (2024) Going the extra mile for patients: Service-oriented high-performance work systems drive nurses' job crafting and extra-role service behaviour. *Journal of Advanced Nursing*, 80 (9). pp. 3637-3652. ISSN: 0309-2402

<https://doi.org/10.1111/jan.16114>

---

**Reuse**

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

**Takedown**

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.

**Going the extra mile for patients: Service-oriented high-performance work systems drive  
nurses' job crafting and extra-role service behaviour**

**Yao Song<sup>a</sup>, Zhen Wang<sup>a\*</sup> and Lynda Jiwen Song<sup>b</sup>**

*a Business School, Central University of Finance and Economics, Beijing, China.*

*b Leeds University Business School, University of Leeds, Leeds, UK.*

**Corresponding author:**

Zhen Wang

Business School, Central University of Finance and Economics, 39# South College Road,

Beijing, China; E-mail: wangzhen@cufe.edu.cn. Tel: (86)10-62288081

**Author contributions**

| <b>Criteria</b>                                                                                                                                                                           | <b>Author Initials</b>                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data;                                                                  | Yao Song, Zhen Wang and Lynda<br>Jiwen Song |
| Involved in drafting the manuscript or revising it critically for important intellectual content;                                                                                         | Yao Song, Zhen Wang                         |
| Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; | Yao Song, Zhen Wang                         |

|                                                                                                                                                                                           |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. | Yao Song, Zhen Wang |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|

**Data availability statement:**

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

**Disclosure statement:**

No potential conflict of interest was reported by the authors.

**Funding:**

This work was supported by the National Natural Science Foundation of China [grant number 72172170].

We confirm that any data utilised in the submitted manuscript have been acquired lawfully.

## **Going the extra mile for patients: Service-oriented high-performance work systems drive nurses' job crafting and extra-role service behaviour**

### **Abstract:**

**Aim:** This study intends to investigate *whether, how* and *when* service-oriented high-performance work systems (SHPWSs) drive nurses' extra-role service behaviour.

**Design:** This was a quantitative cross-sectional study conducted with matched nurse-patient participants.

**Method:** We tested hypotheses using data from 284 nurses and their matched 566 patients. The data was collected in 2019. We conducted a set of hierarchical regression analyses to test our hypotheses.

**Results:** The results showed that SHPWSs have a positive impact on job crafting, which, in turn, mediates the link between SHPWSs and extra-role service behaviours. Additionally, the influence of professional identification moderates these relationships. Specifically, SHPWSs are significantly and positively associated with job crafting among highly professionally identified nurses. The indirect effect is significantly positive when nurses strongly identify with their profession but not significant when their professional identification is low.

**Conclusion:** The results indicated that SHPWSs can elicit job crafting among higher professional identifiers, which further increases extra-role service behaviours towards patients.

**Impact:** Our research emphasizes the significance of HRM themes in the healthcare service industry and their direct impact on healthcare personnel. Shifting from a management-centric to an individual-centric perspective, we focus on the proactive role of nurses. Furthermore, this study enhances the understanding of the boundary conditions for the effectiveness of SHPWSs.

**Patient or public contribution:** Nurses and their mated patients from a Chinese hospital contributed to this study by completing the survey.

**Keywords:** Service-oriented high-performance work systems (SHPWSs); Job crafting; Professional identification; Extra-role service behaviours

## 1 Introduction

Nurses hold a paramount position in the healthcare sector, serving as vital components of patient care (Bacaksiz et al., 2017; Si et al., 2023). Beyond their core clinical responsibilities, nurses play a pivotal role in ensuring the effective delivery of healthcare services, contributing significantly to patient outcomes and overall healthcare quality. In the ever-evolving landscape of healthcare and rising patient expectations (Mayo et al., 2021; Ward & Armitage, 2012), the significance of nurses' extra-role services has become increasingly paramount (Chen et al., 2008; Hyde et al., 2013). Research indicates that such extra-role behaviours can largely improve patients' quality of life while also improving hospital performance, efficacy, and overall image. Moreover, these behaviours have a more profound impact than in-role behaviours (Prottas & Nummelin, 2018; Salas-Vallina et al., 2021). To this end, public hospitals should not only urge staff to fulfill formal job requirements but also encourage them to proactively go the extra mile for patients (Hyde et al., 2013; Salas-Vallina et al., 2021).

Some studies have initiated discussions on this issue (Lamarche et al., 2023; Prottas & Nummelin, 2018); however, they have tended to overlook the role of human resource management (HRM). Being valuable human resources within a hospital, effective management of nurses is an important and worthy focus of attention. However, it is still unknown how hospitals should design and implement HR practices to enhance nurses' extra-role service behaviours. In this study, we propose that *service-oriented high-performance work systems* (service-oriented HPWSs, or SHPWSs) can drive nurses' extra-role service behaviours. In specific, SHPWSs are bundles of HR practices aimed at elevating the performance of customer-facing employees to provide top-notch service quality to customers (Jiang et al., 2015). We focus

on SHPWSs since they target service excellence and can provide comprehensive guidance for nurses in service delivery, which may lead to extra-role service behaviours.

Signaling theory suggests that receivers use multiple cues to interpret received signals, comprehend what responses are expected, and then respond in terms of behaviours deemed acceptable and preferred (Connelly et al., 2011; Drover et al., 2018). Therefore, we believe that when nurses receive signals launched from the hospital's emphasis on service excellence, they will have prompt service-related responses in turn, such as job crafting. Specifically, job crafting, as a form of job redesigning, reflects an individual's proactive and autonomous adjustments to changes at work and includes cognition, relational, and task crafting (Wrzesniewski & Dutton, 2001). When nurses redesign their job boundaries, they often exhibit increased passion for their work, leading them to go above and beyond their assigned tasks and job descriptions (Gazar et al., 2023; Gordon et al., 2018).

Based on signalling theory, individuals' attentiveness to and interpretations of signals (HR practices) vary, thereby influencing the effects of the HR practices. Therefore, we theorize that the above effects do not hold universally but depend on nurses' professional identification. Nurses with high professional identification attach importance to profession goals and are sensitive to the clues and messages in the environment (Ashforth et al., 2008). Thus, we propose that nurses with higher professional identification are keener at capturing signals, have a more profound understanding of signals (SHPWSs), and accordingly react more proactively. Following this logic, professional identification is expected to enhance the positive effect of SHPWSs on job crafting and subsequent extra-role service behaviours. Our research framework is presented in Figure 1.

**Insert Figure 1 here**

## **2 Background**

### **2.1 The signalling perspective to understanding SHPWSs**

Signalling theory (Connelly et al., 2011) is an integrated theory that describes the process of sending signals from senders to receivers. Although originating from the field of economics, signalling theory has recently been used by HR theorists and researchers to examine organizations' designs and delivery of HR practices and employees' understandings and interpretations of these practices (e.g., Baluch et al., 2013). Bowen and Ostroff (2004, p. 206) maintained that 'HR practices can be viewed as a symbolic or signalling function by sending messages that employees use to make sense of and to define the psychological meaning of their work situation.' Thus, signalling theory is a plausible perspective to understand HR practices, employees' reactions, and their outcomes.

SHPWSs aim to elevate service excellence, with HR practices like selection, training, performance management, and rewards signalling a strong organizational commitment to exceptional customer service (Liao et al., 2009). The effectiveness of these signals is particularly evident when these practices are aligned internally, sending consistent messages that the organization highly values and rewards outstanding service (Ehrnrooth & Björkman, 2012; Suazo et al., 2011). Our model canters on the idea of HR practices as signals, nurses' job crafting as a responsive behaviour to these signals, and the influence of professional identification on how these signals are interpreted. It is important to highlight that our study, consistent with prior research (e.g., Liao et al., 2009; Wang et al., 2022), focuses on nurses' perceptions of SHPWS. It's these perceived HR practices, rather than their implementation, that predominantly shape nurses' responses. Moreover, in line with signalling theory (Connelly et al., 2011), HR practices can only act as effective signals when they are perceived and experienced by nurses. Our

hypothesis development section begins by examining the relationship between SHPWSs and job crafting, followed by how these initiatives connect to extra-role service behaviours. Notably, nurses with strong professional identification are better poised to discern these signals and respond proactively.

## **2.2 SHPWSs and job crafting**

SHPWSs encompass a set of practices, including selection, training, performance appraisals, rewards, involvement, and participation, all centered around achieving service excellence (Liao et al., 2009; Luu, 2019; Wang et al., 2022). In accordance with signalling theory, this coherent set of HR practices consistently communicates that the organization prioritizes and expects nurses to provide the highest level of care and service quality. When nurses receive and thoroughly understand these signals, they respond accordingly (Connelly et al., 2011). One potential response among nurses is job crafting, which involves making physical and cognitive adjustments to their tasks or relational boundaries. Job crafting can be categorized into three areas: task, relational, and cognitive crafting (Wrzesniewski & Dutton, 2001). Task crafting entails adding, emphasizing, or redesigning duties beyond the formal job description. Relational crafting involves altering connections with others by building, reframing, or adapting relationships. Cognitive crafting is the process of expanding, focusing, or reshaping job perceptions to change how individuals think about or view their roles (Berg et al., 2013).

First, SHPWSs send nurses messages that they should serve patients in a more expert way, which will make them craft their jobs as professional care service providers. For instance, by experiencing organizations' staffing, training, and development programs towards patient service, nurses will realize that service-related knowledge, skills, and abilities are needed and emphasized in the organization. These insights can motivate nurses to respond actively by adding

tasks or redefining task boundaries to enhance their service-related skills, demonstrating advanced capabilities in patient care (Baluch et al., 2013). In addition to redesigning job tasks as responses, nurses may form closer relationships with co-workers to develop expert and comprehensive service abilities. Nurses who realize that specific skills are required for providing excellent service may adjust their perceptions or subjective experiences of the job (Rudolph et al., 2017). For example, nurses will think highly of the current care job and judge it as professional and valuable.

Second, SHPWSs send signals that excellent care service is rewarded and encouraged, which will trigger nurses to craft their job while serving patients. Performance evaluations and compensation policies directly link rewards to care service quality, reinforcing nurses' awareness of the hospital's commitment to healthcare excellence. This encourages nurses to proactively expand their job scope and enhance their care services (Berg et al., 2013; Rudolph et al., 2017). For instance, a nurse may spend more time and effort guiding patients toward healthy living habits. Moreover, nurses are motivated to deepen and strengthen the relationship by fostering high-quality connections with leaders, co-workers, or patients to acquire new skills and achieve high care service goals. In addition, a nurse may also develop a strong relationship with a patient's family to keep them informed about the patient's condition. Finally, by understanding the significance of care quality within the hospital, nurses can develop a sense of their value, align with the broader objectives, and contribute to the overarching goal of delivering excellence in healthcare services (Gordon et al., 2018; Wrzesniewski & Dutton, 2001). Thus, they will actively think about the meaning of the current job and reframe the significance of the care delivery job.

Third, SHPWSs can convey to nurses that they have flexibility in addressing care service-related issues, which allows them to craft jobs in an autonomous environment. For instance, involvement and participation practices offer nurses the discretion to fulfill extra requirements from patients (Rudolph et al. 2017), which makes them realize that they have authority and latitude to redesign their tasks. Thus, they will adjust their work patterns and select the best strategy for care service tasks. In addition, when nurses comprehend that they can serve patients in a flexible work pattern, they may adjust the existing interpersonal interactions, such as establishing diverse relationships with patients to provide customized care (Berg et al., 2013). In addition, SHPWSs send messages indicating that nurses are empowered to oversee their own jobs. In this situation, they may shift their mindset from being managed to mastering their jobs. Thus, we expect the following:

*Hypothesis 1: Service-oriented high-performance work systems (SHPWSs) are positively related to job crafting.*

### **2.3 The mediating effects of job crafting**

The theoretical framework of job crafting was constructed by Wrzesniewski and Dutton (2001), which reflects employees' proactive and autonomous adjustments to changes at work (Lee & Lee, 2018), leading employees to proactively go beyond the specified requirements outlined in their job descriptions. Generally, these modifications from the 'bottom-top' approach may help employees voluntarily 'do perform that is required', such as exhibiting extra-role behaviours (see Bohnlein & Baum, 2020: for a meta-analytic review). Based on this, we believe that job crafting can induce nurses to engage in extra-role behaviours.

Nurses engage in task crafting to broaden their responsibilities, dedicating more time and energy to patient care (Bacaksiz et al., 2017). This heightened dedication energizes them for

various patient service activities beyond their job descriptions. By altering how they approach tasks, nurses create a foundation for performing extra actions that go beyond their usual duties, helping them manage complex and challenging care tasks, ultimately leading to excellent care performance (Demerouti et al., 2015). Nurses also craft relationships with patients, transforming them into long-term, non-profit connections (Slemp & Vella-Brodrick, 2014). This enhances patient support and satisfaction, with evidence suggesting that meaningful conversations between caregivers and patients are beneficial (Mayo et al., 2021). Additionally, cognitive crafting changes nurses' job perceptions, making them view their roles as more significant and valuable, leading to intrinsic motivation (Slemp & Vella-Brodrick, 2014). Consequently, nurses willingly undertake extra-role behaviours (Bacaksiz et al., 2017).

From the signalling perspective of HRM (Bowen & Ostroff, 2004), SHPWSs send signals to nurses that emphasize the expectation of service excellence. Nurses, as signal receivers, interpret these messages favourably, understanding that “excellence in care service is respected” and recognizing the importance of care-related skills. Consequently, they respond with proactive actions, including adjusting task characteristics, adding tasks to enhance patient care, fostering positive connections with others, and adopting the role of caregiver during patient interactions. Moreover, changing their perception of the job's significance motivates nurses to find meaning in their work by delivering better service to patients (Berg et al., 2013).

*Hypothesis 2: Service-oriented high-performance work systems (SHPWSs) have a positive indirect relationship with nurses' extra-role service behaviours through job crafting.*

## **2.4 The moderating effect of professional identification**

In line with signalling theory, the effectiveness of the signal depends on the constant and observability of the signal, the reliability of the sender, and the characteristics of the receiver

(Connelly et al., 2011). There is evidence to suggest that the effectiveness of signals is determined in part by the receiver. In other words, SHPWSs will not be likely to have significant or positive impacts unless nurses are proactive in looking for signals and appropriately interpreting these practices. Therefore, the qualities and values of the receivers are pivotal in determining how signals exert a positive influence. For example, nurses' professional identification is a crucial individual factor that affects their ability to perceive, understand, and respond to SHPWSs. Professional identification imbues meaning and purpose into nurses' careers, enabling them to view their work as an expression of their interests and talents (Hirschi, 2012).

Following the arguments above, we contend that professional identification, which is defined as "the extent to which an individual defines him or herself in terms of the work he or she does, and the prototypical characteristics ascribed to individuals who do that work" (Mael & Ashforth, 1992, p. 106) may affect the entire process by which the signal has been received, interpreted, and responded to. First, individuals with high professional identification find it easy to comprehend the essence of who they are and what they do in their career (McCrae et al., 2014). Thus, they are sensitive to profession-related information. In other words, nurses who have a strong sense of professional identification value and pay more attention to signals they receive about their profession in the work environment. Only when individuals are willing to capture a signal do they have the potential to exhibit positive responses, such as job crafting. Second, individuals with high professional identification give their jobs greater meaning and generate good opinions about them. For example, nurses may believe their jobs can improve patients' quality of life so that they will have noble meaning in their career (McCrae et al., 2014). In that case, they are more likely to view and interpret HR signals positively since these practices

aim to develop their professional skills and talents or provide them with a platform to highlight the worth of their jobs. Positive perceptions and interpretations will eventually amplify the signal's positive effects. Finally, those who have high professional identification set long-term goals and are strongly driven to devote their efforts to professional development. In addition, individuals who have a high level of professional identification are also more prone to identify themselves with professional norms and values (Hirschi, 2012). In this situation, they are more willing to respond in a proactive way to adjust and modify their current job in terms of the signals to manage and regulate their professional behaviours. These claims align with the more general observation that to the degree one identifies with a particular role (e.g., one's profession), one is likely to interpret—and elaborate upon—various events and stimuli through the lens of that role and its attendant values and practices (Baer et al., 2020).

In contrast, nurses with low professional identification may not fully appreciate the value of their profession. They tend to disregard career-related signals as unimportant, paying little attention to capturing or responding to them through job crafting or proactive actions. Their minimal regard for the profession leads to a negative interpretation of signals like SHPWSs, viewing them merely as task-driven management tools rather than supportive frameworks. Misunderstanding the true intent of signals can hinder their desired impact, and the lack of motivation makes them less likely to redesign their jobs in response (Baer et al., 2020). In summary, we contend that professional identification moderates the link between SHPWS and job crafting, leading us to propose the following hypothesis:

*Hypothesis 3: Professional identification moderates the relationship between SHPWSs and job crafting such that the positive relationship is stronger for nurses with higher professional identification and weaker for those with lower professional identification.*

We present a moderated mediation model where the indirect impact of SHPWSs on extra-role service behaviours through job crafting is influenced by professional identification (Ashforth et al., 2008). Nurses with high professional identification are more attentive to profession-related cues, leading them to redesign their jobs and engage in extra-role service behaviours due to their positive perspectives on SHPWSs. They actively respond when they understand that SHPWSs aim to cultivate exceptional care services. Professionally identified individuals find meaning and enjoyment in their work and are motivated to align their jobs with SHPWSs' messages to excel in care performance, ultimately increasing extra-role service behaviours (Baer et al., 2020). Conversely, nurses with low professional identification perceive signals as meaningless, resulting in less positive interpretation and a reduced proactive response. This weakens the indirect effects of SHPWSs on extra-role service behaviours. In summary, our proposal is as follows:

*Hypothesis 4: Professional identification moderates the indirect effect of SHPWS on nurse extra-role service behaviours through job crafting such that the indirect effect is stronger for nurses with higher professional identification and weaker for those with lower professional identification.*

### **3. The aims of the study**

This research aims to investigate (1) the impact of SHPWSs on nurses' job crafting, (2) the indirect effect of SHPWSs on nurses' extra-role service behaviours through job crafting, (3) the moderating role of nurses' professional identification.

## **4. Methods**

### **4.1 Design**

This was a cross-sectional study conducted with matched nurse-patient participants. To avoid the same rating source-induced common method bias, we collected multisource data from both nurses and their matched patients in accordance with established research methods (Baluch et al., 2013; Lee et al., 2012). To minimize potential bias from a single source and minimize disruption to patients, when possible, we randomly surveyed two patients for each nurse and used the aggregated score. We first obtained information about the patients currently under the care of each nurse from the information management centers of various departments. Following this, we randomly selected patients from this pool by employing a random number generator to ensure that the matching was both random and unbiased. Specifically, nurses provided ratings on experienced SHPWSs, job crafting, and professional identification. The patients were asked to rate the extra-role service behaviours of their matched nurses.

### **4.2 Sample and procedures**

We conducted this research and tested hypotheses using a multisource dataset of 284 nurses and their matched 566 patients, which was obtained from a public hospital in Northeast China in 2019. This hospital is a large-scale public hospital with a total of 4000 employees, including physicians, nurses, medical technologists, patient registration professionals, medical researchers, and administrative personnel. In this study, we sampled the group of nurses because they are on the frontlines dealing with patients, and their extra-role service behaviours usually have significant implications for service quality.

With the support of hospital human resources manager, we collected information from a total of 760 nurses, all of whom, free from hierarchical divisions, met the eligibility criteria for

participating in this research. Employing a randomized selection method, we identified and approached a total of 350 nurses from this designated pool, ensuring a fair and unbiased representation of the diverse nursing staff. Notably, out of the 350 nurses approached, we received responses from 303 nurses who willingly participated in the study by returning the questionnaires. There were 566 patients who provided ratings: 282 nurses had two patients' ratings, 2 had one patient's rating, and 19 had no ratings. We excluded the no-rating samples, and the size of the matched nurse–patient sample was 284. The sampling process and data collection stages are depicted in Figure 2. We conducted attrition analysis using the method of Goodman and Blum (1996) and found no significant differences in key variables (e.g., educational level, tenure, SHPWS, professional identification, and job crafting) between the 19 individuals with missing data and the final sample of 284, providing assurance that the exclusion of these 19 nurses is a random occurrence.

### **Insert Figure 2 here**

## **4.3 Reliability and validity**

### **4.3.1 Measures and reliability**

Following previous research (e.g., Cheng et al., 2003), we asked the respondents to rate items on the following measures using a six-point Likert-type scale. For extra-role service behaviours, we employed a scale ranging from ‘never’ (1) to ‘always’ (6), while the anchors for other scales ranged from ‘strongly disagree’ (1) to ‘strongly agree’ (6). The Appendix presents details about the measures employed in this study.

*Service-oriented HPWSs.* Following Wang et al.'s (2022) suggestion, we measured service-oriented HPWSs with 10 items from Chuang and Liao's (2010) scale, and slightly adapted them for the hospital context. These items covered five bundles of HR practices including staffing,

training, involvement and participation, performance appraisals, and compensation/rewards. Sample items include ‘In this hospital, recruitment emphasizes traits and abilities required for providing high quality of patient services’ and ‘In this hospital, meeting patients’ needs is emphasized in performance appraisals.’ We calculated an index of SHPWSs by averaging the score for each bundle of HR practice (Jiang et al., 2012). The Cronbach’s  $\alpha$  of SHPWS was .83. We conducted a validity assessment of the adapted scale. Our CFA was structured with these five dimensions ( $\chi^2 (5) = 12.123, p < .05, CFI = .96, TLI = .92, RMSEA = .076$ ). The results demonstrated that this categorization approach significantly improved the model fit compared to a single-dimensional structure ( $\chi^2 (35) = 320.4, p < .01, CFI = .75, TLI = .67, RMSEA = .17$ ).

*Job crafting.* We measured job crafting using Slemp and Vella-Brodrick’s (2014) 15-item measure. A sample item is ‘I engage in introducing new approaches to improve my work’. The Cronbach’s  $\alpha$  was .93.

*Professional identification.* We measured professional identification using Lu et al., (2007) 10-item measure. A sample item is ‘I am a person who identifies strongly with the nursing profession’. The Cronbach’s  $\alpha$  was .94.

*Extra-role service behaviours.* We measured extra-role service behaviours with a 5-item scale developed by Bettencourt and Brown (1997). Sample items include ‘This nurse helps me with problems beyond what is expected or required’ and ‘This nurse voluntarily assists me even if it means going beyond job requirements’ ( $\alpha = .95$ ). To reduce single-rater bias, we asked 2 patients to evaluate their nurses’ extra-role service behaviours. We aggregated their evaluations to represent each nurse’s behaviours (Liao & Chuang, 2007).

*Control variables.* We controlled for nurses' age, gender, education, and organizational tenure in the current studies, as they may influence nurses' job crafting and extra-role service behaviours (e.g., Bohnlein & Baum, 2020).

#### **4.3.2 Discriminant validity**

To assess construct validity, we performed CFAs and compared nested structural models. Data analysis was conducted using Mplus Version 8.3, including CFAs to compare measurement models and examine the distinctiveness of the five variables. Given our sample size relative to the measurement items (41 indicators), we employed parcels to ensure a favourable ratio of indicators to sample size, aiming to obtain more reliable latent estimates. Following the recommended parcelling strategies of Little et al. (2013), we applied theory-guided parcelling and also used EFA results to aid our parcelling decisions. Specifically, we created five parcels for SHPWS based on its five practices and three parcels for job crafting based on its three dimensions. In addition, we adopted an item-balancing approach, pairing the highest and lowest load-items to create five parcels for professional identification and three parcels for extra-role service behaviours. The results indicated that the theorized five-factor model provided a good fit to the data ( $\chi^2(98) = 234.316, p < .01, CFI = .96, TLI = .95, RMSEA = .07$ ) and showed a significantly better fit than other alternative models (Table 1).

#### **Insert Table 1 here**

#### **4.4 Analytical strategy**

We ran a set of hierarchical regression analyses to test our hypotheses. In our examination of both the mediation effects and the overall model, the initial step involved the systematic introduction of control variables, followed by the subsequent addition of other variables in the analysis. Prior to hypothesis testing, we grand-mean centred SHPWSs and professional

identification to reduce nonessential multicollinearity and facilitate the interpretation of the moderating effects (Cohen et al., 2003). We employed Aiken and West's (1991) procedures to test the moderating hypotheses. To test mediation effects, we used a parametric bootstrap procedure with 5000 replications. This allowed us to calculate 95% bias-corrected confidence intervals (CIs) for the indirect effects using the parameters and standard errors (Hayes, 2013). For the test of conditional indirect effects, we constructed 95% bias-corrected CIs (Preacher & Hayes, 2008) using 5000 bootstrap samples. Missing data were excluded listwise in the regression analyses.

#### **4.5 Ethics Considerations**

In compliance with local regulations, ethical approval was not required for this survey study involving human participants. Participation was entirely voluntary, and participants were provided with clear written information about the study's purpose, data confidentiality, and their right to withdraw without consequences. No deception or significant risks were involved.

Importantly, the research activities did not disrupt medical operations or impact the well-being of nurses and patients both physically and mentally.

### **5. Results**

#### **5.1 Participant characteristics**

Among the 284 nurses, most (99.30%) were female. This distribution aligns with national data from the National Health Commission of China, indicating that, as of the conclusion of 2021, males constituted a mere 3% of the extensive cohort of over 5 million nurses nationwide. The average age of the participants was 32.62 years, with an average organizational tenure of 11.52 years. More than three-quarters (75.5%) of them had a bachelor's degree, and 22% had college education experience. Table 2 displays a more detailed presentation of sample characteristics.

**Insert Table 2 here**

## **5.2 Descriptive statistics and correlations**

Means, standard deviations and correlations among the variables are presented in Table 3.

SHPWSs were positively related to job crafting ( $r = .46, p < .01$ ) and was positively related to extra-role service behaviours ( $r = .31, p < .01$ ). As predicted, job crafting was positively related to extra-role service behaviours ( $r = .30, p < .05$ ). The results provided a basis for our hypothesis testing. It is noteworthy that the correlation coefficient between professional identification and extra-role behaviour ( $r = .66, p < .01$ ) is higher than the correlation coefficients between other variables and extra-role service behaviour. This measurement reflects the significance of professional identity for nurses in their profession.

**Insert Table 3 here**

## **5.3 Hypothesis tests**

Table 4 presents the results of our hypothesis testing. Model 1 involves controlling for the effects of variables on job crafting, while Model 2 tests our H1 regarding the impact of SHPWS on job crafting. Model 3 examines the moderating effect of professional identification, corresponding to our H3. Model 4 controls for the effects of variables on extra-role service behaviours. Model 5 tests our H2, exploring the mediating effect of job crafting. Finally, Model 6 tests the full model, incorporating moderated mediation effects. Table 5 presents the confidence intervals for the coefficients.

H1 posited that SHPWSs are positively related to job crafting. As shown in Model 2, the results indicated that SHPWSs are positively related to job crafting ( $b = .58, p < .01, 95\% \text{ CI} = [.44, .72]$ ), thereby supporting H1. Regarding H2, we found that job crafting is significantly positively related to extra-role service behaviours (Model 5:  $b = .14, p < .01, 95\% \text{ CI} =$

[.05, .23]). Moreover, the 95% CIs of the indirect effect were positive and significant (indirect effect = .08, 95% CI = [.03, .14]). Thus, H2 was supported.

H3 proposed that nurses' professional identification moderates the relationship between SHPWSs and job crafting. As shown in Model 3, the interaction term of SHPWSs and professional identification was positive and significant ( $b = .13, p < .05, 95\% \text{ CI} = [.01, .24]$ ). To unravel this significant interaction, we conducted a simple slope analysis, examining conditional effects at  $\pm 1$  SD levels of professional identification. This analysis evaluates the slope's magnitude and significance ( $\text{Slope} = .20 \pm 0.13 * 0.83$ ) as the professional identification takes values of  $\pm 1$  SD. The interaction is plotted in Figure 3. SHPWSs were significantly and positively related to job crafting ( $b = .31, p < .01, 95\% \text{ CI} = [.13, .50]$ ) for nurses with a high level of professional identification ( $+1 \text{ SD}$ ); however, for low-professional identification nurses ( $-1 \text{ SD}$ ), the relationship was not significant ( $b = .10, n.s., 95\% \text{ CI} = [-.06, .25]$ ). The results suggested that professional identification accentuates the relationship between SHPWSs and job crafting, as predicted by H3.

#### **Insert Table 4 and Figure 3 about here**

We further tested the moderated mediation effects proposed in H4, which posited that the indirect effect of SHPWSs on extra-role service behaviours through job crafting is moderated by professional identification. Specifically, we tested the conditional indirect effect at two levels of professional identification ( $-1 \text{ SD}$  and  $+1 \text{ SD}$ ). A bootstrap test found that the index of moderated mediation was statistically significant, as the 95% CI excluded zero (index = .02, 95% CI = [.002, .04]). Specifically, as shown in Figure 4, for the nurses with higher professional identification, the indirect effect was positive and significant (indirect effect = .04, 95% CI = [.01, .09]), whereas the indirect effect was not significant when the nurses identified less with

their profession (indirect effect = .01, 95% CI = [−.01, .04]). Thus, Hypothesis 4 was supported. Next, we will discuss our research findings and their implications for theory and practice in detail.

**Insert Table 5 and Figure 4 about here**

## **6. Discussion**

In this study, we examined *whether, how and when* a service-oriented high-performance work system (SHPWS) is related to nurses' extra-role service behaviours in the healthcare context. Our results based on a sample of 284 frontline nurses and 566 patients from a public hospital showed that SHPWSs affect nurses' extra-role service behaviours via job crafting. Furthermore, the indirect effects were more potent for those with a high level of professional identification. We discuss the implications, limitations, and future directions of our study as follows.

### **6.1 Theoretical implications**

First, starting with the management of individuals, we identify a new driving force, i.e., the service-oriented high-performance work system, that drives healthcare nurses' extra-role service behaviours. In doing so, this study enriches our understanding by extending the antecedents of extra-role service behaviours in the healthcare context. In the past two decades, the role of HR practices within the healthcare sector has attracted academic attention, and there is growing research linking HR practices and healthcare nurses' behaviours and patients' experiences (Boselie et al., 2021). Few studies, however, have addressed the roles of targeted HR systems that are designed to enhance extra-role service behaviours in public hospitals where nurses must provide high-quality healthcare to patients. Following the previous research showing that SHPWSs can drive individuals' service-oriented behaviours (Luu, 2019) and may have stronger potential to drive individuals to fulfil and transcend their roles than general HR systems, in this

study, we proposed and found that SHPWSs, i.e., bundles of HR practices targeted for service excellence, can achieve the goal of eliciting extra-role service behaviours among nurses. In particular, by integrating the strategic perspective and signalling theory, we elucidate the signalling function of SHPWSs: a bundle of targeted practices can convey clear and consistent signals to individuals (Bowen & Ostroff, 2004). Much research has applied a number of theories to explain the effects of HRM. Nevertheless, signalling theory has received little attention in HR research. Our employment of a signalling perspective can enrich the theoretical foundation for understanding how HRM affects individual outcomes.

More importantly, by integrating signalling theory and mediating role of job crafting, this study offers fresh insights into how service-oriented HR practices drive individuals' extra-role service behaviours. In this study, we shifted the perspective from a management-centered view to an individual-centered one, considering the proactive role of nurses in this process. Previous research primarily explored how HR practices shape individuals' attitudes and behaviours (Luu, 2019; Shantz et al., 2016), often adopting a management-centric approach where organizations utilize resources to manage individuals, treating them as passive recipients. Our study challenges this perspective by highlighting the active role of nurses in shaping their behaviours. We view nurses not as passive executors of managerial tasks but as proactive architects of their job roles. In essence, our research underscores the significance of nurses' initiative within the management process, providing a more comprehensive understanding of how HR practices influence nurse outcomes in the healthcare context. By demonstrating the initiative roles of nurses as job crafters in translating SHPWSs into care service excellence, we also address calls for research that brings individuals' proactivity into the HRM process (Sheehan et al., 2023).

By emphasizing the moderating influence of professional identification on the connection between SHPWSs and nurses' outcomes, this study enhances our understanding of the contexts in which SHPWSs are effective. It also underscores the significance of professional identification within the nursing profession. While previous research has explored how SHPWSs function, limited attention has been given to their boundary conditions. Consequently, we have limited insights into when SHPWSs are more or less likely to influence nurses' behaviours. Signalling theory, which suggests that the effectiveness of a signal is influenced by the receiver's characteristics, allows us to consider individual factors (Connelly et al., 2011). This raises the question of whether certain personal factors affect how individuals interpret information and events. Our research addresses this question and confirms that professional identification can amplify the impact of SHPWSs. Professional identification, as described by the "orienting effect" concept (Conroy et al., 2017), intricately shapes the interpretation of HR practices and guides extra-role service behaviours. This influence operates through three interconnected facets. Firstly, individuals with a strong sense of professional identification find it effortless to grasp the core of their identity and their role in their career (McCrae et al., 2014). Secondly, those with elevated professional identification attribute deeper meaning to their jobs, fostering positive perceptions. Lastly, individuals characterized by high professional identification set enduring goals and exhibit a robust commitment to dedicating their efforts to professional development (Hirschi, 2012). Together, these three facets illuminate the multifaceted impact of professional identification on the interpretation of HR practices and the motivation of extra-role service behaviours. In summary, by exploring the moderating influence of professional identification, we contribute to a better understanding of '*whether* or *when*' SHPWSs are more advantageous.

Interestingly, we found that SHPWSs had an insignificant effect on nurses with low professional identification. This may be because nurses with weak professional identification have less pride in their jobs and lack motivation to enhance them by adopting new perspectives on their professions (Deng et al., 2018). Consequently, it is plausible and meaningful that nurses with varying levels of professional identification exhibit different job crafting and extra-role service behaviours when encountering SHPWSs. In addition, as illustrated in our study, professional identification can positively influence nurses' job crafting and extra-role service behaviours. In well-defined and specialized professions like nursing, those with stronger professional identification tend to align themselves with their specific field, allowing them to view organizational or industry practices through the lens of that specialized area (Baer et al., 2020). In this case, they will engage in a series of profession-driven behaviours.

## **6.2 Implications for policy and practice**

First, public hospitals should take steps to ensure that the design and implementation of HR practices are different from those of generic HPWSs, emphasizing the nature of service. Notably, it is important to recognize that the management of public hospitals is complex and that the adoption of HRM is a complicated and time-consuming process (Boselie et al., 2021; Lee et al., 2012). To accomplish this, public hospitals may develop customized training plans to address the specific needs of healthcare professionals and enhance their professional skills. This may encompass training on the latest medical technologies, patient relationship management, and emergency response procedures. Additionally, public hospitals should establish platforms to support the ongoing participation of healthcare professionals in learning opportunities, including online courses, research initiatives, and workshops aimed at advancing their professional skills. At last, public hospitals can implement a robust performance system that explicitly

acknowledges and rewards healthcare professionals for delivering exceptional service quality. This could involve performance bonuses, public recognition, or opportunities for career advancement based on demonstrated excellence in patient care (Xiao et al., 2022).

Second, as we found that job crafting can enhance nurses' extra-role service behaviours, public healthcare organizations and administrators should encourage and support nurses to engage in job crafting. For instance, public hospitals should allow autonomy and discretion for nurses to craft their tasks. In fact, nurses in the service industry may carry out a variety of tasks simultaneously because they may work with a variety of consumers. In other words, facing the reality of high levels of role stress for many healthcare workers (Sheehan et al., 2023), public healthcare service organizations should recognize job crafting as a coping strategy and tool. Thus, providing sufficient empowerment for service nurses to craft their tasks can give them the opportunity to cope with service task shifting (Hu et al., 2022). Second, fostering a harmonious interpersonal environment will enable nurses to engage in relational crafting (Renkema et al., 2021). Finally, continual emphasis on the value and significance of nursing work serves to assist nurses in cognitive reframing. This specifically involves aiding nurses in recognizing their pivotal role within healthcare services.

Third, our findings suggest that nurses' sense of professional identification can play an important role in the process of receiving and reacting to organizations' HR practices. Public hospitals should attach importance to nurses' professional identification, especially for those in particular occupations (i.e., nurse). To maximize the advantages of such practices, healthcare organizations should create a climate in which the medical profession is valued and respected and pay attention to matching professional norms when designing and implementing HR policies. In addition, hospitals should implement 'supportive and developmental' HR practices

that can help nurses improve their professional knowledge and specialized abilities. Finally, public healthcare organizations should enhance nurses' awareness of their own value within the organization. Such as regularly providing nurses with appropriate rewards and recognition, whether through salary increments, acknowledgment events, or other forms, serves as direct feedback for excellent performance.

Furthermore, by encouraging and recognizing nurses' extra-role service behaviours, healthcare organizations can enhance patient care in the immediate term and contribute to the long-term well-being of both patients and the healthcare workforce (Xiao et al., 2022). This positive cycle of proactive engagement, facilitated by HR practices aligned with job crafting and professional identification, holds the potential to create a more patient-centered, attentive, and effective healthcare environment, ultimately benefiting the entire healthcare ecosystem. This holistic approach benefits not only individual patients but also the broader healthcare community, establishing a foundation for sustainable and positive healthcare practices.

### **6.3 Limitations and recommendations for further research**

This study is not without limitations. First, we used cross-sectional data, which may confound the causal relations of the variables. Longitudinal design studies or experimental studies are warranted to better identify the relationships among variables. Collecting data over additional time points could have provided us with a better opportunity to assess changes and draw somewhat stronger causal conclusions. The second limitation pertains to the predominant representation of females in our sample, which is primarily influenced by objective factors, particularly the higher prevalence of female nurses in China. Although this might not necessarily impact the study conclusions, we believe that future research should still consider employing a sample with a more balanced gender distribution for enhanced robustness and broader

applicability. Moreover, the control variables in the current study did not account for other more widespread external factors, such as shift length and patient severity. These factors may influence nurses' work conditions and job satisfaction, subsequently affecting their extra-role service behaviors. To enhance the comprehensiveness and precision of future analyses, it is recommended to integrate these variables as controls.

Future research can further delve into exploration from two aspects. On one hand, we also consider our single-mechanism-based investigation to be a limitation, and such a tight focus on the signalling function neglects all other explanations as to why HPWSs may influence individual outcomes (Jiang & Messersmith 2018). Thus, we call for future research that comprehensively tests or compares mechanisms between perceived SHPWSs and extra-role service behaviours. For example, future research could employ social exchange theory to investigate how an individual's 'trust in the organization', 'commitment to the organization', or 'felt obligation to the organization' mediates the 'HRM—extra-role behaviors' relationship.

On the other hand, although we have identified the underlying mechanism and boundary condition of SHPWSs, we only take individuals' job crafting and professional identification into consideration; other individual factors, such as public service motivation, were not considered. Indeed, prior research has illustrated the effects of public service motivation in connecting HR practices and public individuals' behavioural outcomes (Luu, 2021; Mostafa, 2015). Given the important role of public service motivation in public individuals' attitudes and behaviours, further research can include it in the relationship between SHPWSs and extra-role service behaviours to tease out the unique roles of job crafting and professional identification. It is also worthwhile to compare the effects of PSM and job crafting/professional identification in healthcare service delivery. This line of inquiry is critically important as it can help managers

understand the role of HRM for different individuals and help them make better use of HR practices.

## 7. Conclusion

Nurses' extra-role service behaviour plays a pivotal role in ensuring the quality of public healthcare services, making it vital for public hospitals to stimulate this behaviour. Implementing the SHPWSs is a highly effective strategy among various measures. Based on signalling theory, we believe that SHPWS can emit a signal of prioritizing service. When nurses detect this signal, they are more likely to respond proactively. Using a multisource dataset of 284 nurses and 566 matched patients, we tested our hypotheses and found that SHPWSs influence nurses' extra-role service behaviours through job crafting. Additionally, these indirect effects are more pronounced for individuals who have a strong professional identification.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.
- Ashforth, B. E., Harrison, S. H., & Corley, K. G. (2008). Identification in organizations: An examination of four fundamental questions. *Journal of Management*, 34(3), 325–374. doi: 10.1177/0149206308316059
- Bacaksiz, F. E., Tuna, R., & Seren, A. K. H. (2017). The relationships between organizational identification, job performance, and job crafting: A study among nurses. *International Journal of Caring Sciences*, 10(1), 251–259. doi: 10.20409/berj.2020.245
- Baer, M., Dane, E., & Madrid, H. (2020). Zoning out or breaking through? Linking daydreaming to creativity in the workplace. *Academy of Management Journal*, 64(5), 1553–1577. doi: 10.5465/amj.2017.1283
- Baluch, A. M., Salge, T. O., & Piening, E. P. (2013). Untangling the relationship between HRM and hospital performance: The mediating role of attitudinal and behavioral HR outcomes. *The International Journal of Human Resource Management*, 24(16), 3038–3061. doi: 10.1080/09585192.2013.775027
- Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2013). *Job crafting and meaningful work*. In B. J. Dik, Z. S. Byrne, & M. F. Steger (Eds.), *Purpose and meaning in the workplace* (pp. 81–104). Washington, DC: American Psychological Association.

- Bettencourt, L. A., & Brown, S. W. (1997). Contact employees: Relationships among workplace fairness, job satisfaction, and prosocial service behaviours. *Journal of Retailing*, 73(1), 39–61. doi: 10.1016/S0022–4359(97)90014–2
- Boselie, P., Van Harten, J., & Veld, M. (2021). A human resource management review on public management and public administration research: Stop right there... before we go any further... *Public Management Review*, 23(4), 483–500.
- Bowen, D. E., & Ostroff, C. (2004). Understanding HRM–firm performance linkages: The role of the “strength” of the HRM system. *Academy of Management Review*, 29(2), 203–221. doi: 10.5465/amr.2004.12736076
- Cheng, B. S., Jiang, D. Y., & Riley, J. H. (2003). Organizational commitment, supervisory commitment, and employee outcomes in the Chinese context: Proximal hypothesis or global hypothesis? *Journal of Organizational Behaviour*, 24(3), 313–334. doi: 10.1002/job.190
- Chuang, C. H., & Liao, H. (2010). Strategic human resource management in service context: Taking care of business by taking care of employees and customers. *Personnel Psychology*, 63(1), 153–196. doi: 10.1111/j.1744–6570.2009.01165.x
- Cohen, J., Cohen, P., West, S., & Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). New York: Erlbaum.
- Connelly, B., Certo, T., Ireland, D., & Reutzel, C. (2011). Signalling theory: A review and assessment. *Journal of Management*, 37(1), 39–67. doi: 10.1177/0149206310388419
- Conroy, S. A., Becker, W. J., & Menges, J. I. (2017). The meaning of my feelings depends on who I am: Work–related identifications shape emotion effects in organizations. *Academy of Management Journal*, 60(3), 1071–1093. doi: 10.5465/amj.2014.1040
- Demerouti, E., Bakker, A. B., & Gevers, J. M. (2015). Job crafting and extra–role behavior: The role of work engagement and flourishing. *Journal of Vocational Behavior*, 91, 87–96. doi: 10.1016/j.jvb.2015.09.001
- Deng, H., Coyle–Shapiro, J., & Yang, Q. (2018). Beyond reciprocity: A conservation of resources view on the effects of psychological contract violation on third parties. *Journal of Applied Psychology*, 103(5), 561–577. doi: 10.1037/apl0000272
- Drover, W., Wood, M. S., & Corbett, A. C. (2018). Toward a cognitive view of signalling theory: Individual attention and signal set interpretation. *Journal of Management Studies*, 55(2), 209–231. doi: org/10.1111/joms.12282
- Fornell, C., & Larcker, D. E. (1981). Evaluating structural equation models with unobserved variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. doi: 10.1177/002224378101800104
- Goodman, J. S., & Blum, T. C. (1996). Assessing the non-random sampling effects of subject attrition in longitudinal research. *Journal of Management*, 22(4), 627–652. doi.org/10.1016/S0149-2063(96)90027-6

- Gordon, H. J., Demerouti, E., Le Blanc, P. M., Bakker, A. B., Bipp, T., & Verhagen, M. A. (2018). Individual job redesign: Job crafting interventions in healthcare. *Journal of Vocational Behavior*, 124, 98–114. doi: S000187911730060X
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. Guilford Press.
- Hirschi, A. (2012). Callings and work engagement: Moderated mediation model of work meaningfulness, occupational identity, and occupational self-efficacy. *Journal of Counseling Psychology*, 59(3), 479–493. doi: 10.1037/a0028949
- Hu, B., McCune Stein, A., Mao, Y., & Yan, A. (2022). The influence of human resource management systems on employee job crafting: An integrated content and process approach. *Human Resource Management Journal*, 32(1), 117–132.
- Hyde, P., Harris, C., & Boaden, R. (2013). Pro-social organisational behaviour of health care workers. *The International Journal of Human Resource Management*, 24(16), 3115–3130. doi: 10.1080/09585192.2013.775030
- Jiang, K., & J. Messersmith. (2018). On the shoulders of giants: A meta-review of strategic human resource management. *The International Journal of Human Resource Management*, 29(1), 6–33. doi: org/10.1080/09585192.2017.1384930.
- Jiang, K., Chuang, C. H., & Chiao, Y. C. (2015). Developing collective customer knowledge, and service climate: The interaction between service-oriented high-performance work systems and service leadership. *Journal of Applied Psychology*, 100(4), 1228–1238. doi: 10.1037/apl0000005
- Jiang, K., Lepak, D. P., Hu, J., & Bear, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264–1294. doi: 10.5465/amj.2011.0088
- Lee, J. Y., & Lee, Y. (2018). Job crafting and performance: Literature review and implications for human resource development. *Human Resource Development Review*, 17(3), 277–313. doi: 10.1177/1534484318788269
- Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology*, 94(2), 371–391. doi: 10.1037/a0013504
- Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods*, 18(3), 285–300. doi: org/10.1037/a0033266.
- Lu, H., While, A. E., & Barriball, K. L. (2007). Job satisfaction and its related factors: A questionnaire survey of hospital nurses in mainland china. *International Journal of Nursing Studies*, 44(4), 574–588. doi: 10.1016/j.ijnurstu.2006.07.007
- Luu, T. T. (2019). Service-oriented high-performance work systems and service-oriented behaviours in public organizations: The mediating role of work engagement. *Public Management Review*, 21(6), 789–816. doi: 10.1080/14719037.2018.1526314

- Luu, T. T. (2021). Activating job crafting in public services: The roles of discretionary human resource practices and employee use of normative public values. *Public Management Review*, 23 (8), 1184–1216. doi: 10.1080/14719037.2020.1730942.
- Mael, F., & Ashforth, B. E. (1992). Alumni and their alma mater: A partial test of the reformulated model of organizational identification. *Journal of Organizational Behavior*, 13(2), 103–123. doi: 10.1002/job.4030130202
- Mayo, A. T., Myers, C. G., & Sutcliffe, K. M. (2021). Organizational science and health care. *Academy of Management Annals*, 15(2), 537–576. doi: 10.5465/annals.2019.0115
- McCrae, N., Askey-Jones, S., & Laker, C. (2014). Merely a stepping stone? Professional identity and career prospects following postgraduate mental health nurse training. *Journal of Psychiatric and Mental Health Nursing*, 21(9), 767–773. doi: 10.1111/jpm.12131
- Meijerink, J. G., Anna Bos–Nehles, & Jan de Leede (2020). How employees’ proactivity translates high commitment HRM systems into work engagement: The mediating role of job crafting. *The International Journal of Human Resource Management*, 31(22), 2893–2918. doi: 10.1080/09585192.2018.1475402
- Mostafa, A. M. S., Gould-Williams, J. S., & Bottomley, P. (2015). High-performance human resource practices and employee outcomes: The mediating role of public service motivation. *Public Administration Review*, 75(5), 747–757. doi.org/10.1111/puar.12354.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891. doi: 10.3758/BRM.40.3.879
- Prottas D. J., & Nummelin M. R. (2018). Behavioral integrity, engagement, organizational citizenship behavior, and service quality in a healthcare setting. *Journal of Healthcare Management*, 63(6), 410–424. doi: 10.1097/JHM-D-17-00134
- Renkema, M., de Leede, J., & Van Zyl, L. E. (2021). High-involvement HRM and innovative behaviour: The mediating roles of nursing staff’s autonomy and affective commitment. *Journal of Nursing Management*, 29(8), 2499–2514.
- Rudolph, C. W., Katz, I. M., Lavigne, K. N., & Zacher, H. (2017). Job crafting: A meta-analysis of relationships with individual differences, job characteristics, and work outcomes. *Journal of Vocational Behavior*, 102, 112–138. doi: 10.1016/j.jvb.2017.05.008
- Salas–Vallina, A., Pasamar, S., & Donate, M. J. (2021). Well-being in times of ill-being: How AMO HRM practices improve organizational citizenship behaviour through work-related well-being and service leadership. *Employee Relations: The International Journal*, 43(4), 911–935. doi: 10.1108/ER-05-2020-0236
- Shantz, A., Alfes, K., & Arevshatian, L. (2016). HRM in healthcare: The role of work engagement. *Personnel Review*, 45(1), 274–295. doi: 10.1108/PR-09-2014-0203

- Sheehan, C., Tham, T. L., Holland, P., Cooper, B. K., & Newman, A. (2023). The relationship between HIWPs and nurse work engagement: The role of job crafting and supervisor support. *The International Journal of Human Resource Management*, 34(1), 1–27. doi: 10.1080/09585192.2021.1956564.
- Slemp, G. R., & Vella-Brodrick, D. A. (2014). Optimizing employee mental health: The relationship between intrinsic need satisfaction, job crafting, and employee well-being. *Journal of Happiness Studies*, 15(4), 957–977. doi: 10.1007/s10902-013-9458-3
- Si, X., Xue, H., Song, X., Liu, X., & Zhang, F. (2023). The relationship between ethical leadership and nurse well-being: The mediating role of workplace mindfulness. *Journal of Advanced Nursing*, 79(10), 4008–4021. doi.org/10.1111/jan.15719
- Suazo, M., Martinez, P., & Sandoval, R. (2011). Creating psychological and legal contracts through human resource practices: A signalling perspective. *Human Resource Management Review*, 19(2), 154–166. doi: 10.1007/s10672-011-9169-z
- Wang, Z., Xing, L., Song, L. J., & Moss, S. E. (2022). Serving the customer, serving the family, and serving the employee: Toward a comprehensive understanding of the effects of service-oriented high-performance work systems. *The International Journal of Human Resource Management*, 33(10), 2052–2082.
- Ward, J. K., & Armitage, G. (2012). Can patients report patient safety incidents in a hospital setting? A systematic review. *BMJ Quality & Safety*, 21(8), 685–699. doi: 10.1136/bmjqs-2011-000213
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, 26(2), 179–201. Doi: 10.5465/amr.2001.4378011
- Xiao, Q., Cooke, F. L., & Chen, L. (2022). Nurses' well-being and implications for human resource management: A systematic literature review. *International Journal of Management Reviews*, 24(4), 599–624. doi.org/10.1111/ijmr.12295

Table 1 Comparison of Measurement Models

| Models                         | $\chi^2$ | <i>df</i> | $\Delta\chi^2$ | CFI | TLI | RMSEA |
|--------------------------------|----------|-----------|----------------|-----|-----|-------|
| Model 1: SHPWSs, PI, JC, ESB   | 234.316  | 98        | -              | .96 | .95 | .07   |
| Model 2: SHPWSs + JC, PI, ESB  | 484.003  | 101       | 249.687**      | .89 | .87 | .12   |
| Model 3: SHPWSs + PI + JC, ESB | 667.923  | 103       | 433.607**      | .84 | .82 | .14   |
| Model 4: SHPWSs + PI + JC+ ESB | 1544.179 | 104       | 1309.86**      | .60 | .53 | .22   |

Note: All alternative models were compared with the hypothesized model (i.e., Model 1). \*\*  $p < .01$ .

SHPWS = service oriented HPWSs, PI = professional identification, JC = job crafting,

ESB= extra-role service behaviours.

Table 2 Demographic characteristics of the sample

| Variables                | N (%)      | Variables                        | N (%)      |
|--------------------------|------------|----------------------------------|------------|
| <b>Age (years)</b>       |            | <b>Tenure (years)</b>            |            |
| <31                      | 6(2%)      | <5                               | 44(15.5%)  |
| 31-40                    | 109(38.3%) | 5-10                             | 112(39.3%) |
| 41-50                    | 144(50.7%) | 11-15                            | 70(24.6%)  |
| >50                      | 25(9%)     | >15                              | 58(20.6%)  |
| <b>Gender</b>            |            | <b>Department</b>                |            |
| Male                     | 3(1%)      | Oncology                         | 28(9.8%)   |
| Female                   | 281(99%)   | Cardiovascular & Cerebrovascular | 27(9.5%)   |
| <b>Educational level</b> |            | Internal Medicine                | 73(25.7%)  |
| Junior college           | 64(22.5%)  | Surgery                          | 56(19.7%)  |
| Bachelor's degree        | 214(75.5%) | Nursing Department               | 76(26.8%)  |
| Master's degree          | 6(2%)      | Dentistry                        | 10(3.5%)   |
|                          |            | Obstetrics & Gynaecology         | 14(5%)     |

Table 3 Means, Standard Deviations, and Correlations among Variables

| Variables                        | <i>M</i> | <i>SD</i> | 1      | 2    | 3      | 4     | 5     | 6     | 7     |
|----------------------------------|----------|-----------|--------|------|--------|-------|-------|-------|-------|
| 1. Age                           | 32.62    | 6.33      |        |      |        |       |       |       |       |
| 2. Gender                        | .99      | 0.08      | .04    |      |        |       |       |       |       |
| 3. Organisational tenure         | 11.52    | 6.93      | .97**  | .04  |        |       |       |       |       |
| 4. Educational                   | 4.71     | 0.66      | -.18** | -.03 | -.23** |       |       |       |       |
| 5. SHPWSs                        | 4.98     | 0.66      | -.15*  | -.06 | -.17** | .16** |       |       |       |
| 6. Job crafting                  | 4.25     | 0.84      | -.03   | -.01 | -.05   | .13*  | .46** |       |       |
| 7. Professional identification   | 4.79     | 0.83      | -.05   | -.02 | -.07   | .13*  | .55** | .66** |       |
| 8. Extra-role service behaviours | 5.46     | 0.58      | -.05   | -.06 | -.05   | .08   | .31** | .30*  | .34** |

*N* = 284

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

Table 4 Hierarchical Regression Results

| Variables                            | Job crafting |         |         | Extra-role service behaviours |         |         |
|--------------------------------------|--------------|---------|---------|-------------------------------|---------|---------|
|                                      | Model 1      | Model 2 | Model 3 | Model 4                       | Model 5 | Model 6 |
| Age                                  | .04          | .03     | .03     | -.001                         | -.01    | -.01    |
| Gender                               | -.06         | .18     | .15     | -.40                          | -.31    | -.31    |
| Educational level                    | .15          | .08     | .03     | .07                           | .03     | .02     |
| Organisational tenure                | -.003        | -.001   | -.002   | .00                           | .001    | .001    |
| <b>Independent variable</b>          |              |         |         |                               |         |         |
| SHPWSs                               |              | .58**   | .20**   |                               | .19**   | .13*    |
| <b>Mediator</b>                      |              |         |         |                               |         |         |
| Job crafting                         |              |         |         |                               | .14**   | .09     |
| <b>Moderator</b>                     |              |         |         |                               |         |         |
| Professional identification          |              |         | .60**   |                               |         | .11*    |
| <b>Interaction</b>                   |              |         |         |                               |         |         |
| SHPWSs × Professional Identification |              |         | .13*    |                               |         | -.05    |
| Adjusted R <sup>2</sup>              | .008         | .22     | .46     | .01                           | .13     | .15     |

*N* = 284

\*\*  $p < .01$  \*  $p < .05$ . †  $p < .1$

Table 5 Confidence Intervals for Path Coefficients

| Path                                                                                | Coefficient | 95% CI      |
|-------------------------------------------------------------------------------------|-------------|-------------|
| SHPWSs → Job crafting                                                               | .58         | [.44, .72]  |
| SHPWSs → Job crafting → Extra-role service behaviours                               | .08         | [.03, .14]  |
| Job crafting → Extra-role service behaviours                                        | .14         | [.05, .23]  |
| SHPWSs × Professional identification → Job crafting                                 | .13         | [.01, .24]  |
| SHPWSs × Professional identification → Job crafting → Extra-role service behaviours | .02         | [.002, .04] |

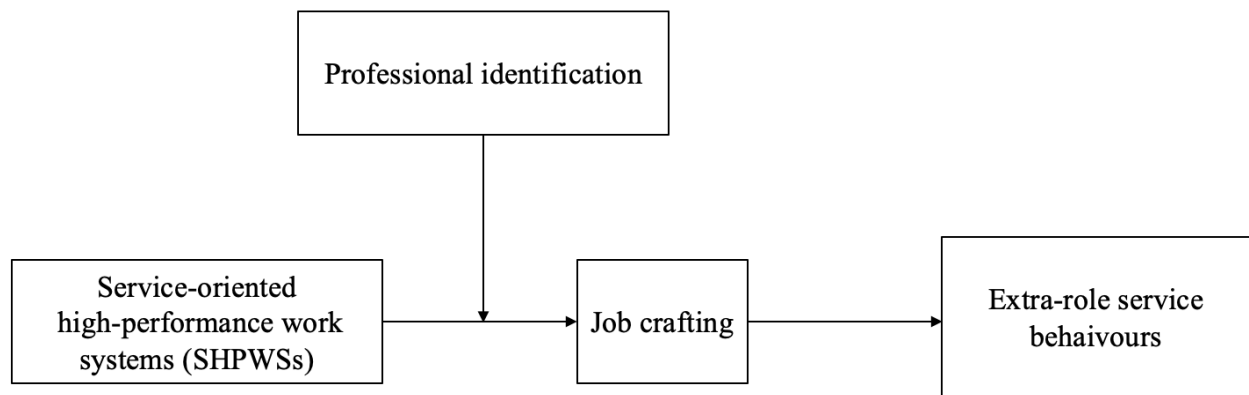


Figure 1 Research Framework

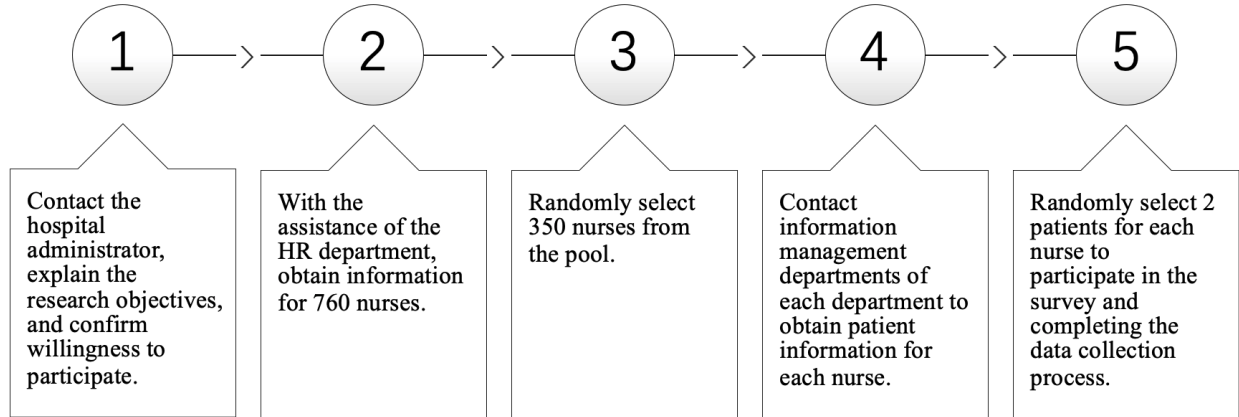


Figure 2 Sampling and Data Collection

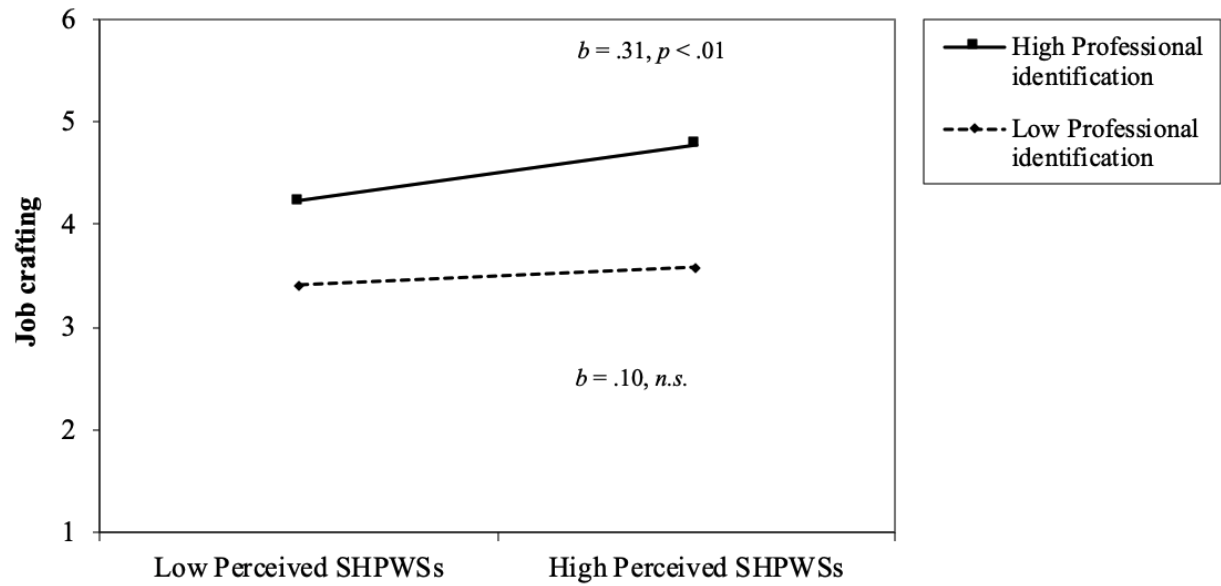


Figure 3 The Moderating Role of Professional Identification on the Relationship between SHPWSs and Job Crafting

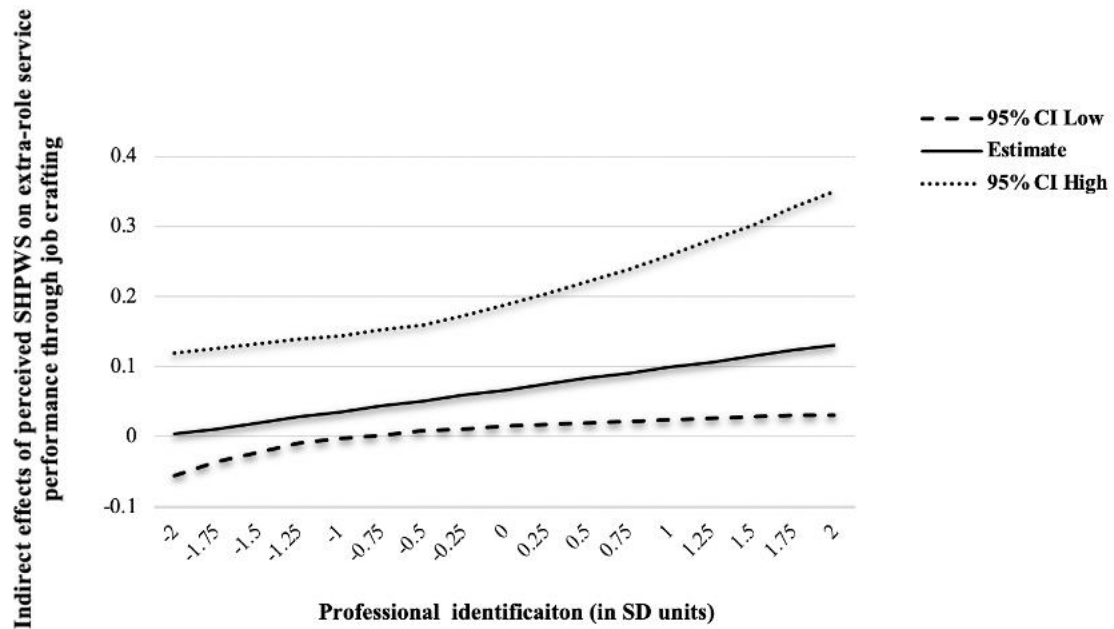


Figure 4 Conditional Indirect Effect of SHPWSs on Extra-role Service Behaviours through Job Crafting at Different Levels of Professional Identification

### Appendix: Factor Loading of Measurement

| Construct    | Items                                                                                                                            | Bundles  | $\lambda$ (factor loading) |
|--------------|----------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------|
| SHPWS        | Recruitment emphasizes traits and abilities required for providing high quality of patient services                              | Bundle 1 | 0.797                      |
|              | High-quality patient services are emphasized in training.                                                                        | Bundle 2 | 0.828                      |
|              | Performance appraisals are based on multiple sources (self, co-workers, supervisors, patients, etc.).                            | Bundle 3 | 0.728                      |
|              | Satisfying patients is the most important work guideline.                                                                        |          |                            |
|              | Meeting patients' needs is emphasized in performance appraisals.                                                                 |          |                            |
|              | The hospital rewards medical staff for new ideas for improving patient services.                                                 | Bundle 4 | 0.758                      |
|              | The hospital gives special rewards to medical staff who excel in serving patients.                                               |          |                            |
|              | Medical staff has discretion in handling patients' additional requests.                                                          | Bundle 5 | 0.752                      |
|              | Medical staff has discretion in settling patient complaints without reporting to a supervisor or other specialists.              |          |                            |
|              | The hospital fully supports medical staff with necessary equipment and resources for providing high quality of patient services. |          |                            |
| Job crafting | Introduce new approaches to improve my work.                                                                                     | Bundle 1 | 0.896                      |
|              | Modify the scope or type of tasks I complete at work.                                                                            |          |                            |
|              | Introduce new job tasks that align better with my skills or interests.                                                           |          |                            |
|              | Choose to take on additional tasks at work.                                                                                      |          |                            |
|              | Prioritize job tasks that align with my skills or interests.                                                                     |          |                            |
|              | Reflect on how my job contributes to my life goals.                                                                              | Bundle 2 | 0.878                      |
|              | Remind myself of the significance of my work for the success of this hospital.                                                   |          |                            |
|              | Remind myself of the broader impact of my work on the community.                                                                 |          |                            |
|              | Reflect on how my job positively influences my life.                                                                             |          |                            |
|              | Consider the role of my job in my overall sense of happiness.                                                                    |          |                            |
|              | Make an effort to understand others in the workplace.                                                                            | Bundle 3 | 0.858                      |
|              | Organize or participate in social activities related to work.                                                                    |          |                            |
|              | Plan special events in the workplace (e.g., celebrating colleagues' birthdays).                                                  |          |                            |

|                             |                                                                                         |          |       |
|-----------------------------|-----------------------------------------------------------------------------------------|----------|-------|
|                             | Choose to formally or informally mentor new employees.                                  |          |       |
|                             | Make friends with individuals in the workplace who share similar skills or interests.   |          |       |
| Professional identification | I am a person who identifies strongly with the nursing profession.                      | Bundle 1 | 0.921 |
|                             | I don't make excuses for being in the nursing profession.                               |          |       |
|                             | I consider the nursing profession to be important.                                      | Bundle 2 | 0.902 |
|                             | I feel closely connected to other members of the nursing profession.                    |          |       |
|                             | I derive a great deal of satisfaction from working in the nursing profession.           | Bundle 3 | 0.927 |
|                             | I don't attempt to conceal the fact that I belong to the nursing profession.            |          |       |
|                             | I see myself as a part of the nursing profession.                                       | Bundle 4 | 0.901 |
|                             | I refrain from criticizing the nursing profession.                                      |          |       |
|                             | I don't feel constrained by the nursing profession.                                     | Bundle 5 | 0.898 |
|                             | I don't feel distressed about identifying myself as a member of the nursing profession. |          |       |
| Extra-role behaviours       | This nurse voluntarily assists me even if it means going beyond job requirements.       | Bundle 1 | 0.942 |
|                             | This nurse helps me with problems beyond what is expected or required.                  | Bundle 2 | 0.971 |
|                             | This nurse consistently exerts his/her best efforts to assist me.                       |          |       |
|                             | When serving me, this nurse often goes beyond the job requirements.                     | Bundle 3 | 0.965 |
|                             | This nurse does their utmost to satisfy me.                                             |          |       |