Exploring the doctor-patient relationship as a challenge job demand: application of the job demands–resources model in a Chinese public hospital

Weilong Zeng, Shaozhuang Ma, Victor J. Callan and Linghong Wu

ABSTRACT
In the increasingly commercialized healthcare environment in China, doctor-patient relationship (DPR) is a job demand for doctors that is linked to various motivational outcomes. Drawing on the Job Demands–Resources (JD-R) model, and the conservation of resources theory, we develop a preliminary conceptual model that links Leader Member Exchange (LMX) as a job resource, and DPR as a challenge job demand, to the levels of work engagement and turnover intentions of doctors working in this healthcare environment. Using two-wave data collected from 381 doctors in a public hospital, we found support for the hypothesized model. Results of a series of SEM analyses revealed that LMX was positively related to DPR and work engagement, while DPR partially mediates the path from LMX to work engagement. In addition, LMX is negatively related to turnover intentions through DPR and subsequently work engagement. Theoretically, this study contributes to the development of the JD-R model by investigating the concept of challenge job demand, and its role in the motivational process, with new evidence from healthcare occupations in China. Practically, this study contributes to the limited number of studies on managing the changing nature of the DPR in China, and in seeking potential solutions based on established organizational constructs.

INTRODUCTION
The doctor-patient relationship (DPR) is the set of interactions between a doctor and patient in the context of a doctor’s delivery of all medical care (Hakanen et al., 2008). It is a core feature of any healthcare system, and one that is facing major change in many contexts. In China, the marketization of healthcare with associated reforms, and insufficient government funding to public hospitals, has driven public hospitals to become ‘commercial medical service providers’ with patients as ‘customers’ (Ma et al., 2017). In this emerging pragmatism–based model of the DPR, there is evidence of growing mutual distrust between doctors and patients, more incidents of impersonal...
and ineffective communication and more short-lived and transactional relationships (Ma et al., 2017). Poor DPR not only negatively impacts upon the patient care and patient satisfaction (Wang et al., 2016), but also affects doctors’ wellbeing and work attitudes such as their levels of work engagement and turnover intentions (Moreno-Jiménez et al., 2012).

The Job Demands–Resources (JD-R) model is a useful framework to study healthcare professionals (A. B. Bakker et al., 2000; Elfering et al., 2017). In extensions of the model (Crawford et al., 2010; Van Den Broeck et al., 2010), job demands include challenges and hindrances. Challenge job demands have a duality in their characteristics, on the one hand being energy-depleting, and on the other hand, simultaneously stimulating as they are perceived instrumental to achieving valued outcomes such as work goal attainment (Van Den Broeck et al., 2010).

Guided by the JD-R model, we argue that in the current Chinese healthcare setting, the DPR acts as a challenge job demand, given its characteristics of being not only physically and psychologically stressful, but also financially and professionally rewarding. In general, employees in healthcare occupations are regularly confronted with demanding patients (Xanthopoulou et al., 2007). Interacting with demanding patients who have low trust in doctors and hospitals requires not only professional competence, but also emotional demands (Bakker & Sanz-Vergel, 2013). However, different from the ‘lack of reciprocity’ in the exchange relationship with patients in Western public healthcare organizations (A. B. Bakker et al., 2000), Chinese doctors benefit both potential financial and professional reciprocity in their relationship with patients. In China, public hospitals are essentially ‘for-profit’ organizations through user charges to balance insufficient subsidies from governments (Cooke & Zhan, 2013). Doctors’ pay and bonuses are associated with the number of patients they receive (He, 2014). This ‘pragmatism-based model’ of DPR is focused on an economic exchange where doctors are reciprocated with financial gains for their services. Nevertheless, it is also acknowledged that many Chinese doctors derive a sense of pride and responsibility from their professional service that is developed based on good DPR (Helllin, 2002).

However, as noted there is a ‘cost’ for such economic reciprocity and professional pride. Specifically, profit-oriented medical practices by hospitals and doctor leads to mistrust, hostility and violence against doctors (Ma et al., 2017; Wee, 2018). In addition, in potentially hostile working conditions, Chinese doctors deal not only with emotionally demanding patients but also their families and associated conflicts. Such emotional demands, interpersonal conflicts and harassment by patients are typical job demands (Schaufeli & Taris, 2014).

Leader-Member Exchange (LMX) theory holds that leaders maintain a close relationship with members in their inner circle and both sides enjoy high-quality LMX (Graen & Uhl-Bien, 1991). High-LMX subordinates enjoy more support, increased responsibility, and access to information which increases the meaning of work for these subordinates (Aryee & Chen, 2006). In particular, LMX constitutes a relevant job resource for doctors to deal with the DPR issue, as the leader is a key job resources provider (Loi et al., 2014) and supervisor support per se is a key job resource (Demerouti et al., 2001). Therefore, we hypothesized that:

**H1: LMX is positively related to DPR.**

As a challenge job demand, DPR has a potentially positive relationship with engagement. As discussed earlier, DPR acts as a challenge job demand, and as a positively valued
demand could be conceptualized as a resource which has the motivational potential to boost levels of work engagement (see Schaufeli & Taris, 2014). Thus, we hypothesize that:

**H2: DPR is positively related to work engagement.**

The JD-R model proposes that job resources lead to increased motivation and performance, while job demands lead to strain and health impairment. Crawford et al. (2010) argue that a job resource such as leadership is positively associated with engagement. Considering our earlier argument on the positive association between DPR and work engagement (Hypothesis 2), we anticipate that:

**H3: DPR partially mediates a positive relationship between LMX and work engagement.**

The JD-R model implies two causal processes: the health impairment process and the motivational process. While high job demands lead to burnout and other negative outcomes like turnover intentions and health issues, job resources result in work engagement and positive organizational outcomes (e.g. organizational commitment). Earlier studies reveal that challenge job demand is positively related to work engagement (e.g. Van Den Broeck et al., 2010). Drawing on the JD-R theory and empirical evidences (e.g. A. Bakker et al., 2003), we argue that similar to job resources, challenge job demand (DPR, in this case) fosters goal accomplishment and stimulates positive work behavior such as work engagement, which reduces turnover intention. Considering our previous argument that DPR is positively related to work engagement (Hypothesis 2), we hypothesize that:

**H4: DPR is negatively related to turnover intention through the mediation effect of work engagement.**

Considering the overall relationships between LMX, DPR, work engagement and turnover intention, LMX acts as job resource (Loi et al., 2014) that helps to promote positive DPR. Furthermore, DPR as a challenge job demand has the potential for both extrinsic and intrinsic motivation (e.g. financial gain, a sense of accomplishment). Thus, the motivations from an improved DPR will promote work engagement, which in turn will reduce turnover intention. In summary, in line with the JD-R model, LMX as a job resource is negatively associated with turnover intention through DPR and work engagement. Therefore, we hypothesized that:

**H5: LMX is negatively related to turnover intention through a sequential indirect effect through improved (a) DPR and subsequently (b) work engagement.**

**Method**

**Participants and procedure**

This two-wave study utilized questionnaire data collected in September (T1) and December 2017 (T2) at a tertiary public hospital in Southwest of China. The first survey
(T1) obtained 431 valid questionnaires which measure DPR and demographic variables. The questionnaire in the second study phase (T2) was sent to those who returned the valid response at T1. The second survey measured LMX, work engagement and turnover intention with 381 valid responses. Most participants were male (59%), married (85%) and aged under 50 years of age (88%). Clinicians accounted for 88% (334) of respondents.

**Measures**

Except for the control variables, we used a six-point Likert scale (1 = 'strongly disagree', 6 = 'strongly agree') to measure all the scales.

LMX was measured with the LMX-7 scale (Graen & Uhl-Bien, 1995; Scandura & Graen, 1984). DPR was measured with the nine-item doctor-perceived DPR scale in China (DPR-C) developed by Zeng et al. (2018). The scale includes two components of doctor’s perceptions of the doctor-patient relationship: (1) patient-centered treatment (e.g. *I provide the optimal treatment to my patient after considering many alternatives*) and (2) mutual trust between the patient and doctor (e.g. *My patient trusts that I will put his or her medical need in the first place*). We measured work engagement with nine items of the engagement scale developed by Schaufeli et al. (2002). The turnover intention was measured with the scale developed by Rosin and Korabik (1991), including four items.

The SPSS20.0 and AMOS17.0 statistical software was used to perform the statistical analyses. The detailed analyses and results are described next.

**Results**

**Descriptive statistics**

The descriptive results are reported in Table 1. There is a significant positive correlation between LMX and DPR (r = .22, p < .01); LMX and DPR are both significant positively correlated with work engagement (r = .59, r = .29, respectively, p < .01); LMX, DPR, and work engagement are significant negatively correlated with turnover intention (r = -.34, r = -.20, r = -.40, respectively, p < .01). All significant correlations are in the expected direction.

**Table 1. Means, standard deviations and correlations among the key variables.**

| Variable              | Mean (SD)    | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       |
|-----------------------|--------------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1.Gender              |              |         |         |         |         |         |         |         |         |
| 2.Age                 |              | -.09    |         |         |         |         |         |         |         |
| 3.Marital status      |              |         | .06     | .32**   |         |         |         |         |         |
| 4.Job function        |              | .16**   | .005    | -.03    |         |         |         |         |         |
| 5.LMX                 | 4.79(0.86)   | -.13*   | .01     | .03     | -.17*   | .89     |         |         |         |
| 6.DPR                 | 5.23(0.54)   | -.04    | .02     | .12*    | -.11*   | .22**   | .88     |         |         |
| 7.Work Engagement     | 4.83(0.86)   | -.16**  | .08     | .05     | -.11*   | .59**   | .29**   | .90     |         |
| 8.Turnover Intention  | 1.67(0.81)   | .05     | -.02    | .01     | .002    | -.34**  | -.20**  | -.40**  | .92     |

N = 381. ** p < .01; *p < .05;
**Measurement model**

All scales used in the study were subjected to CFA analysis. Our measurement model was composed of four latent factors (LMX, DPR, work engagement and turnover intention). The confirmatory factor models (Table 2) showed that the four-factor model yielded a better fit to the data \((\text{CMIN} = 295.54, \text{df} = 145, \text{RMSEA} = .05, \text{CFI} = .93, \text{TLI} = .96, \text{SRMR} = .05)\) than alternative models. The common method variance (CVM) was assessed by conducting a single factor CFA solution (Podsakoff et al., 2012). Results reported a poor fit for the one-factor model. Therefore, given this finding and the separation of variables over time 1 and 2 in the questionnaires, common method bias is not seen to be a major concern for this study.

**Structural model**

We employed SEM to test our hypothesized model. Specifically, we followed Mao et al. (2019) and compared different models (Table 3) to test the three-path sequential mediation model: LMX-DPR-work engagement-turnover intention. We first tested the hypothesized sequential mediation model (i.e. the full model) which included both the direct path and the indirect path (Hypotheses 1–5). Results showed that the model fitted well with the data \((\chi^2 = 282.07, \text{df} = 145, \text{CFI} = .97, \text{TLI} = .97, \text{RMSEA} = .05, \text{AIC} = 410.07, \text{SRMR} = .04)\). Next, we tested five alternative models from a ‘work engagement as mediator only’ model (Alternative model 1) to a ‘reversed causality’ model (Alternative model 5). These alternative models were significantly worse in fit than the full model. These model comparison results showed that our proposed theoretical model had the best fit to the data (Figure 1).

**Table 2. Comparison of measurement models.**

| Model Description | \(\chi^2\) | \(\text{df}\) | \(\chi^2/\text{df}\) | \(\Delta\chi^2/\text{df}\) | RMSEA | CFI | TLI | SRMR |
|-------------------|--------|--------|----------------|-------------------|-------|-----|-----|------|
| 1. Four-factor model (LMX, DPR, WE, TI) | 295.54 | 145 | 2.04 | - | .05 | .93 | .96 | .05 |
| 2. Three-factor model (LMX and DPR combined as one factor) | 1572.42 | 149 | 10.55 | 1276.88*** | .16 | .64 | .67 | .09 |
| 3. Two-factor model (LMX, DPR and WE combined as one factor) | 1981.45 | 151 | 13.12 | 409.03*** | .18 | .58 | .58 | .10 |
| 4. One-factor model (all items combined as one factor) | 2909.97 | 152 | 19.15 | 928.52*** | .22 | .44 | .37 | .11 |

N = 381; ***p < .001; LMX = leader-member exchange; DPR = doctor-patient relationship; WE = work engagement; TI = turnover intention; df = degree of freedom.

**Table 3. Procedure of structural equations modelling comparison.**

| Model | \(\chi^2\) | \(\text{df}\) | \(\chi^2/\text{df}\) | CFI | TLI | RMSEA | \(\Delta\chi^2\) | \(\Delta\text{df}\) | \(p\) | AIC | SRMR |
|-------|--------|--------|----------------|-----|-----|-------|----------------|----------------|-----|-----|------|
| Full model with sequential mediation (Final Model) | 282.07 | 145 | 1.95 | .97 | .97 | .05 | - | - | - | 410.07 | .04 |
| Alternative Model 1: WE as mediator only | 321.72 | 147 | 2.19 | .96 | .96 | .06 | 39.64 | 2 | <.001 | 445.72 | .11 |
| Alternative Model 2: DPR as mediator only | 466.59 | 147 | 3.17 | .94 | .92 | .08 | 184.51 | 2 | <.001 | 590.59 | .18 |
| Alternative Model 3: Direct effects only | 484.68 | 148 | 3.28 | .93 | .92 | .08 | 202.61 | 3 | <.001 | 606.68 | .19 |
| Alternative Model 4: Reversed mediation | 286.79 | 146 | 1.96 | .97 | .97 | .05 | 4.72 | 1 | <.05 | 374.79 | .05 |
| Alternative Model 5: Reversed Causality | 286.79 | 146 | 1.96 | .97 | .97 | .05 | 4.72 | 1 | <.05 | 374.79 | .05 |
Based on the results of the full model, our hypotheses H1 and H2 are supported. In addition, the bootstrapping procedure showed that the indirect effect of LMX on work engagement through DPR was significant (95% confidence interval = [0.03, 0.12]), supporting H3. The bootstrapping procedure showed that the indirect effect of DPR on turnover intention through work engagement was significant (95% confidence interval = [−0.15, −0.06]), supporting H4. LMX was negatively related to turnover intention through the sequential mediation of DPR and work engagement, and the bootstrapping procedure showed that the indirect effect was significant (95% confidence interval = [−0.35, −0.18]), supporting H5. Table 4 summarized the direct and indirect effects among the paths.

**Discussion**

Using a two-wave survey of 381 doctors in China, this study applied the JD-R model to examine the relationships between LMX, DPR, work engagement and turnover intention among Chinese doctors. The results reveal that LMX and DPR positively influence work engagement directly, but negatively influence turnover intention indirectly. LMX was positively related to DPR and work engagement, and DPR partially mediates the path.
from LMX to work engagement. In addition, LMX is negatively related to turnover intention through DPR and subsequently work engagement.

This study contributes to the number of limited studies on managing this escalating DPR issue in China from an organizational perspective (Ma et al., 2017). In addition, this study expands previous studies on the JD-R model, and contributes to the continued development of the JD-R model by investigating the challenge demand concept with evidence from healthcare occupations in China.

This finding suggests that LMX as a job resource can improve DPR. In line with the conservation of resources theory, to cope with the stressful job characteristics of DPR (e.g. emotional and demanding patients), doctors must gain additional resources to achieve their work goals. It is possible that high-quality LMX may provide doctors with resources such as emotional support and rewards. Specifically, LMX may compensate for the doctors’ consumed resources caused by strained DPR, and help doctors to better focus on patient-centered treatment and improve the degrees of mutual trust between doctors and patients.

DPR was positively related to work engagement and was negatively related to turnover intention through the mediation effect of work engagement. These findings provide preliminary evidence for our proposal of DPR in China as a challenge demand in the JD-R model because of its duality as a stressful demand and the potential for future gains and goal attainment (Crawford et al., 2010). Further, such findings provide support for the argument by Schaufeli and Taris (2014) that challenge demand has the motivational potential to promote work engagement. However, Crawford et al. (2010) warn that the appraisal of demand as a challenge can change as a result of experiences over time, and as a consequence, the relationships between the DPR and both engagement and turnover intention may change as well. For example, a doctor might come to believe that the DPR he or she faces is a hindrance rather than a challenge (i.e. if the DPR becomes threatening to the self and a hindrance to accomplishing a sense of fulfilment).

DPR partially mediates the positive relationship between LMX and work engagement and LMX influences turnover intention through the sequential mediation of DPR and work engagement. Specifically, this finding suggests that high-quality LMX provides doctor resources to deal with the difficulties encountered in work (DPR), which increase doctor’s work engagement and the more engaged doctor becomes less likely to leave the organization. This is in line with the ‘dynamic, process-oriented’ perspective that psychological contract (LMX in this case) affects job attitudes (e.g. work engagement, turnover intention), but attitudes may also affect the psychological contract (Bal et al., 2013). That implies that engaged individuals are motivated to stay engaged and to conserve their resources in their organizations (Bakker & Demerouti, 2017).

Lastly, the hypothesized model suggests that LMX and DPR are not directly, but indirectly, associated with turnover intention. Again, this implies the ‘dynamic, process oriented’ perspective evidenced in previous studies (Bal et al., 2013; Xanthopoulou et al., 2009). The results highlight that LMX’s influence on employee’s turnover intention function in a complex and indirect way in which the leader offers employees’ resources to better manage their job demands and thus enhance their work engagement and subsequently increase their intention to stay.
**Theoretical contributions**

Near 20 years since the introduction of JD-R model by Demerouti and her colleagues (Demerouti et al., 2001), the JD-R model has been applied in thousands of organizational studies across the world. The distinction of hindrance job demands, and challenge job demands is being recognized as a conceptual breakthrough in explaining numerous mixed findings from tests of the model (Bakker & Demerouti, 2017).

This study contributes to the advancement and application of the JD-R model in two ways. First of all, we answer the call by A. Bakker et al. (2003, p. 413) that 'thus a task of researchers and practitioners is to uncover the specific constellations of job demands and job resources that are prevalent in specific job types'. Indeed, most studies on JD-R model use standardized scales or concepts to measure job resources (e.g. social and supervisor support) and job demands (e.g. workload and emotional demands), while every organization may have its own specific characteristics. This study expanded the job demands (i.e. DPR) construct to a broader boundary by identifying DPR as a challenge job demand (Van Den Broeck et al., 2010) that is embedded in a specific working environment in Chinese healthcare organizations. Moreover, this study provided support for the concept of challenge job demand and its role in the motivational process driven by job resources. Thus, our exploratory model advances theoretical developments in this regard (Daniels, 2016). Second, this study makes a unique contribution by applying the JD-R model that has originated in Europe to the specific contexts of Chinese healthcare work environment. By so doing, we not only improve our understanding of the particular phenomena occurring in work and organizational settings in the Chinese healthcare sector, but also contribute to the JD-R model literature with samples from the healthcare professional group from a country with a different economic, social and cultural context.

**Practical implications**

The present study has implications for policymakers, hospitals and managers. First, our study suggests that LMX is a feasible approach to manage DPR at the organizational level. This is important because the DPR issue in China is complex, embedded in a large and complex bureaucratic healthcare system. The results of this study indicate that LMX promotes the level of DPR, which in turn improves doctor’s work engagement and lowers their turnover intention. Therefore, it is worthwhile for policymakers and hospitals to invest in leadership training and development. For example, promoting group preferences and encouraging open communication between leaders and doctors may help attenuate the effects of turnover intention on actual turnover (Wong & Cheng, 2020).

In addition, to increase the doctor’s work engagement and lower turnover intentions, DPR is a critical factor. In this study, DPR consists of two components, ‘patient-centered treatment’ and ‘mutual trust between doctor and patient’. At the macro level, policymakers and hospitals need to create and maintain a positive and trustworthy healthcare environment, because mutual trust between the doctor and patient must be built on the patient’s experience and perceptions of the hospital and the healthcare sector as a whole. Moreover, the doctor as a knowledge worker should focus more on intrinsic satisfaction (e.g. professional pride) and treat patients with compassion rather than aiming for financial gains.
The following limitations are acknowledged. First, the sample from a tertiary public hospital limits the generalizability of the findings to other Chinese hospitals. In addition, our argument that DPR is a challenge demand needs to be further explored and tested in future research. Future research may use more qualitative methods to understand how DPR might have motivational and health impairment effects on doctors. Also, it would be worthwhile to investigate the association between the context in which Chinese physicians work and their workplace mindfulness.

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**ORCID**

Shaozhuang Ma [ http://orcid.org/0000-0002-2199-1400 ]

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