The mediation effect of psychological capital on the relation between occupational stress and depressive symptoms among Chinese doctors: a cross-sectional study

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Abstract

Background

Although occupational stress has been identified as a predictor of depressive symptoms, the mechanism of how occupational stress results in depressive symptoms has not been well understood yet. The purpose of this study with a positive perspective was to examine the mediation effect of psychological capital (PsyCap) on the relation between occupational stress and depressive symptoms among Chinese doctors.

Methods

The cross-sectional survey was conducted in Liaoning province, China from September through October of 2010. Self-administered questionnaires including depressive symptoms assessed by the Center for Epidemiologic Studies Depression Scale (CES-D), occupational stress evaluated by the effort-reward imbalance (ERI) scale and PsyCap estimated by the 24-item Psychological Capital Questionnaire (PCQ), together with age, gender, marital status and education, were distributed to 1300 doctors employed in large general hospitals, and the final sample consisted of 998 subjects. The asymptotic and resampling strategies were employed to examine the mediation effect of PsyCap on the relation between occupational stress and depressive symptoms.

Results

Both the effort-reward ratio (ERR) and overcommitment were significantly associated with depressive symptoms among both male and female doctors. There was a gender
difference in the mediation effect of PsyCap on the occupational stress-depressive symptoms relation. For male doctors, there was no mediation effect of PsyCap on the relation between occupational stress and depressive symptoms. For female doctors, ERR (a = -0.301, p < 0.01) and overcommitment (a = -0.116, p < 0.01) were negatively associated with PsyCap, and the PsyCap was also negatively associated with depressive symptoms. As a result, the mediation effects of PsyCap were significant on the relations of ERR (a*b = 0.082, BCa 95% CI: 0.049, 0.126, p < 0.05) and overcommitment (a*b = 0.043, BCa 95% CI: 0.005, 0.083, p < 0.05) with depressive symptoms, respectively.

**Conclusions**

PsyCap might be a positive resource for combating depressive symptoms in Chinese doctors. In addition to reducing the level of occupational stress, PsyCap development is suggested to be included in the prevention and treatment strategies of depressive symptoms, especially for female doctors.
Background

Depression has become a major mental health issue in various workplaces worldwide. Depression and depressive symptoms could affect workers’ decision-making and cooperation [1,2], resulting in low productivity, absenteeism, job turnover, and economic costs [3,4]. In addition, depression and depressive symptoms might be able to impair the quality of life of workers [5].

Doctors are usually exposed to high levels of occupational stress, and at higher risk of suffering from depression than the general population and some other low-risk occupational groups [6,7]. Our previous study found that the prevalence of depressive symptoms among Chinese doctors was 65.3% [8]. Frank and Dingle indicated that high depression might even lead to higher suicide attempts among physicians [9]. In addition to reduced work performance and professional responsibilities [10], depression and depressive symptoms was supposed to be a threat to health care quality and patients’ safety. Fahrenkopf et al. reported that depressed residents made more medical errors than their non-depressed peers significantly [11]. Therefore, depression and depressive symptoms at work might be a critical issue not only for the doctors themselves, but also for the health status of those patients they treat [8].

Researchers have thus raised concern about the prevention and treatment of doctors’ depression and depressive symptoms at work around the world [8,12,13]. Occupational stress has been identified as a predictor for depression and depressive symptoms [12,14]. As a human service profession, doctors are highly exposed to various occupational stressors, such as work overload, time pressure, role conflicts,
effort-reward imbalance and unsatisfactory doctor-patient relationship [7,12,15].

Unfortunately, the occupational stress is deteriorating in China due to limited health workforce, patient-centered health care pattern and healthcare system reform domestically. Therefore, Chinese doctors may be more vulnerable to depression and depressive symptoms comparing to employees in other occupations. Additionally, burnout, rational coping and workplace bullying have posed significant mediation effects on the relation between occupational stress and depression and depressive symptoms [16-18]. On the basis of previous studies, occupational stress not only exerts a direct effect, but also has an indirect effect on depression and depressive symptoms through triggering some specific psychological responses. Therefore, in-depth research on the relation between depression and depressive symptoms and occupational stress should be conducted to develop more effective prevention and treatment strategies of depression.

Positive psychological capital (PsyCap) is a higher-order core construct that initially best meets the inclusion criteria for positive organizational behavior (POB), aiming at the study and application of positively oriented human resource strengths and psychological capacities [19]. The PsyCap consists of four state-like psychological resource capacities, involving self-efficacy, hope, optimism, and resiliency, which can be measured, developed, and effectively managed. Self-efficacy represents the positive belief about one’s abilities to succeed at challenging tasks. Hope is defined as the positive motivational state to persevere toward desired goals and redirect pathways to them. Resilience is the positive psychological capacity to bounce back
from failure and adversity, and even beyond to attain success. Optimism is the positive explanatory style to make a self-attribution about success [20]. The PsyCap has significantly positive effects on performance improvement [20-23], job embeddedness [22], satisfaction [20], organizational commitment [23], and well-being [24] in workplaces. PsyCap can also be employed as a positive resource for combating employees’ stress symptoms and turnover [25]. In addition, PsyCap has a mediating role in the relation between supportive organizational climate and employees’ performance [26]. Luo and Hao reported that PsyCap mediated the relation between job burnout and turnover intention among Chinese nurses [27]. To our knowledge, the potential impact of occupational stress on PsyCap and the associations between PsyCap and depression and depressive symptoms have not been examined among health workers. In addition, the mediation effect of PsyCap on the relation between occupational stress and depression and depressive symptoms has not been confirmed. Moreover, it is important to understand the mediation effect of PsyCap on this relation in order to prevent and treat depression and depressive symptoms adequately.

In light of above concerns, the goals of the present study were to i) examine the relation between occupational stress and PsyCap, ii) determine the relation between PsyCap and depressive symptoms, and iii) investigate the mediation effect of PsyCap on the relation between occupational stress and depressive symptoms among Chinese doctors.

**Methods**
Study design and study sample

A cross-sectional survey was conducted in Liaoning province, China with a population of 43 million, from September through October of 2010. According to geographic regions, one city in each region (eastern, western, southern, northern and central) was randomly selected. Two large general hospitals (> 500 beds) were randomly selected if the sampling city was the capital city, and one large general hospital was randomly selected in other sampling city each. In total, six large general hospitals were selected from five cities in our study. We randomly sampled 50% of the doctors from each selected hospital. Self-administered questionnaires were directly distributed to 1,300 doctors after obtaining written informed consent of the survey. We received effective responses from 998 individuals (76.77%), and these doctors became our final subjects consisting of 448 (44.89%) males and 550 (55.11%) females. The study was approved by the Committee on Human Experimentation of China Medical University, and the study procedures were in accordance with the ethical standards.

Measurement of depressive symptoms

Depressive symptoms were measured with the 20-item Chinese version of the Center for Epidemiologic Studies Depression Scale (CES-D) [28,29]. Each item contained four options that describe how often the respondents had this feeling in the past week ranging from 0 ‘rarely or none of the time (less than 1 day)’ to 3 ‘most or all of the time (5 to 7 days)’. The summed score ranged from 0 to 60, which increased with the severity of depressive symptoms. In addition, the CES-D had been extensively
validated in the Chinese occupational groups [8,30]. For example, an acceptable Cronbach’s alpha of 0.88 was reported among health workers [30]. Cronbach’s alpha for the CES-D in the present study was 0.91 for both male and female doctors.

Measurement of occupational stress

The effort-reward imbalance (ERI) model is built upon social reciprocity, and the failed social reciprocity due to high effort and low reward at work elicits occupational stress [31]. With its focus on the individual vital interests at work, the ERI model may be particularly suitable for studying the health adverse effects of occupational stress as currently witnessed in China, because the rewards from work directly affect the quality of life of Chinese people in the economic take-off stage. Chinese physicians experienced the failed social reciprocity and suffered from its health damage [32,33]. The Chinese version of ERI scale was translated and provided by Yang and Li [34].

The ERI scale consists of three subscales: effort (6 items), reward (11 items) and overcommitment (6 items). For effort and reward subscales, the measurement procedure consists of two steps: initially, the participants express their attitude toward work situation (‘agree’ or ‘disagree’); subsequently, they are asked to evaluate to what extent (from ‘not distressed’ to ‘very distressed’) they usually feel distressed. For overcommitment subscale, the responses are scored from 1 to 4. In addition, occupational stress is expressed by two independent measures: effort-reward ratio (ERR) and overcommitment. The ERR is calculated using a predefined algorithm with a correction factor of 0.5454. A ERR beyond 1.0 indicates a high amount of effort spent that is not met by adequate rewards in turn. Those individuals who score
high on overcommitment tend to spend an inadequate amount of effort that is not met by externally defined rewards.

The Chinese ERI scale has been widely applied among the Chinese occupational groups with good reliability and validity [32,33,35]. For Chinese physicians, Li et al. reported that the Cronbach alpha of effort, reward and overcommitment subscales were 0.80, 0.83, and 0.74 for Chinese male physicians and 0.76, 0.80, and 0.78 for the females [33]. In this study, the Cronbach’s alpha of effort, reward and overcommitment subscales were 0.91, 0.91, and 0.78 for male doctors and were 0.90, 0.91, and 0.79 for the females.

**Measurement of PsyCap**

The Chinese version of the 24-item Psychological Capital Questionnaire (PCQ) was adopted to measure the level of PsyCap [20]. The PCQ consists of four subscales: self efficacy (6 items), hope (6 items), resilience (6 items) and optimism (6 items). Each item has six responses with categories ranging from 1 ‘strongly disagree’ to 6 ‘strongly agree’. Due to the higher-order core construct of PsyCap, the four key psychological resource capacities have a synergistic effect [26]. The average score for the total scale was calculated to get a composite PsyCap in this study, with higher scores indicating greater total PsyCap.

Luthans et al. has demonstrated adequate reliability and construct validity of the PCQ across multiple samples [20]. The Chinese PCQ was initially applied among the Chinese population, including company’s employees [36,37], college students [38], and nurses [22,27]. Sun et al. reported the Cronbach alpha of self efficacy, hope,
resilience, optimism, and total scale were 0.81, 0.82, 0.63, 0.50, and 0.88 for Chinese nurses [22]. After revision, Luo and Hao demonstrated that the Cronbach’s alpha of total scale and subscales had a range from 0.71 to 0.93 [27]. In the present study, we conducted a confirmatory factor analysis (CFA) that demonstrated adequate goodness-of-fit to the proposed second-order four-factor model in current data (GFI = 0.900, TLI = 0.936, CFI = 0.945, and RMSEA = 0.063 for male doctors and GFI = 0.900, TLI = 0.921, CFI = 0.933, and RMSEA = 0.068 for female doctors). Alpha of self efficacy, hope, resilience, and optimism in the current sample were 0.90, 0.89, 0.84, and 0.83 for male doctors and 0.88, 0.88, 0.85, and 0.85 for the females. For the total scale, Alpha was 0.95 for male doctors and 0.94 for the females.

**Demographic characteristics**

Demographic information regarding gender, age, marital status and education were obtained in this study. Marital status was categorized as single or married. Education was categorized as junior college or less, college and graduate or more.

**Statistical Analysis**

Pearson’s chi-square (\(\chi^2\)) test was used to compare differences in marital status and education among male and female doctors. The differences in continuous variables were examined by t-test and one-way ANOVA. Pearson’ test was performed to exam the correlations among continuous variables. We employed the asymptotic and resampling strategies developed by Preacher and Hayes to examine the mediation effect of PsyCap on the relation between occupational stress that evaluated by ERI scale and depressive symptoms [39]. In the regression equation, ERR and
overcommitment were modeled as predictors, depressive symptoms as outcome, PsyCap as mediator (depicted in Figure 1), and age, martial status and education as covariates. The analysis was implemented via two following steps: i) determining the associations between occupational stress and depressive symptoms (the c path) and ii) estimating the mediation effect (the a*b products) of PsyCap. When the c path coefficient was smaller than the c path from the first step in size or was not significant in the second step, the possibility of mediation was speculated. The bootstrap estimate presented in our study was based upon 5,000 bootstrap samples. Then, the bias-corrected and accelerated 95% confidence interval (BCa 95% CI) for each a*b product was investigated, and BCa 95% CI excluding 0 indicated a significant mediation. All of the above analyses were conducted by SPSS for Windows (Ver. 13.0). The statistical significance was defined as p < 0.05. We analyzed the data for male and female doctors separately because of possible gender differences. Additionally, before performing the regression analyses, all study variables were standardized due to the differences in scale scores.

Results

Characteristics of subjects

Marital status, education, age, and means and standard deviations (SDs) of study variables are presented for male and female doctors separately in Table 1. For male doctors, 90.32% had received at least college education. For females, 90.36% had received at least college education. There was a significant difference in marital status between male and female doctors ($\chi^2 = 15.040, p < 0.01$). In continuous variables, the
only significant difference between the means of males and females was observed in age \((t = 3.743, p < 0.01)\). Within each marital status and education group, there were no significant differences in variables of depressive symptoms, ERR, overcommitment, and PsyCap between male and female doctors. Also, there were no significant differences in the four variables of males and females among marital status and education groups.

**Correlations of study variables**

Correlations among the study variables can be seen in Table 2. For male doctors, age was positively correlated with overcommitment and PsyCap, respectively. Depressive symptoms had a positive correlation with ERR and a negative correlation with PsyCap. Overcommitment was positively correlated with PsyCap. However, there were no significant correlations between depressive symptoms and overcommitment, and between ERR and PsyCap among the males. For female doctors, age was only positively correlated with PsyCap. All correlations among depressive symptoms, ERR, overcommitment, and PsyCap were significant among female doctors.

**PsyCap as a mediator of the relation between occupational stress and depressive symptoms**

Path coefficients, \(a*b\) products and BCa 95% CI for these products are presented in Table 3. Firstly, associations between occupational stress evaluated by ERI scale and depressive symptoms (the \(c\) path) were determined. Positive associations among ERR, overcommitment and depressive symptoms were observed within both male and female doctors.
Subsequently, the mediation effects of PsyCap on the relation between occupational stress and depressive symptoms were estimated. For male doctors, ERR and overcommitment were not significantly associated with PsyCap (the a path). As a result, the mediation effect of PsyCap on the relation between occupational stress and depressive symptoms mentioned in our study was not revealed among male doctors, even though their PsyCap levels had a significantly negative association with depressive symptoms (the b path) after controlling for the initial variables, respectively. For female doctors, ERR ($a = -0.301$, $p < 0.01$) and overcommitment ($a = -0.116$, $p < 0.01$) were negatively associated with PsyCap. Consistent with the results from male doctors, PsyCap was significantly negatively associated with depressive symptoms after controlling for ERR and overcommitment, respectively. Thus, the mediation effects of PsyCap were significant on the relations among ERR ($a*b = 0.082$, BCa 95% CI: 0.049, 0.126, $p < 0.05$, $R^2 = 0.251$), overcommitment ($a*b = 0.043$, BCa 95% CI: 0.005, 0.083, $p < 0.05$, $R^2 = 0.161$) and depressive symptoms, respectively. And the two models above explained 25.1% and 16.1% of the variance in depressive symptoms, respectively. The direct pathways among ERR, overcommitment and depressive symptoms (the $c'$ path) were still significant when PsyCap presented in the model as mediator.

To estimate the effect size of mediated pathway, we calculated the proportion of the total effect of independent variable on dependent variable (c) mediated by mediator with the formula $(a*b)/c$. For female doctors, the proportion of the mediation effect of PsyCap was 19.07% for ERR, and 24.29% for overcommitment.
Discussion

As a special occupational group, some occupational stressors inherent in doctors could be more severe than some other professional groups, such as employees from education service, machinery, equipment, and electronic components manufacturing, public agency and national defense [7,40]. The duty of doctors is to save lives. Thus, doctors highly expose to suffering, disease, and even death everyday, and probably face high demands and bear more responsibility and uncertainty inevitably. In this study, total effects of extrinsic stress (ERR) and intrinsic stress (overcommitment) evaluated by the ERI scale on depressive symptoms were positively significant among both male and female Chinese doctors. These results were consistent with previous studies among health workers from different countries [30,41]. Therefore, the possible interventions to depressive symptoms of Chinese doctors should include reducing the level of occupational stress through rationalizing workload, increasing work rewards (such as work fairly, promotion, stability, respect, perspective, support, and income), and avoiding overcommitment (through developing effective strategies for managing time, taking on suitable commitments, focusing on efforts for coping with work demands, learning effective coping styles for getting things done).

Recently, few studies have focused on the potential mediators of the occupational stress-depressive symptoms relation among health workers. Wu et al. reported that rational coping mediated the effect of occupational stress on depressive symptoms among Chinese female nurses [17]. Ahola and Hakanen reported that job burnout played a mediating role in the relation between job strain and depression among
Finnish dentists [16]. These results indicated that research on both direct and indirect effects of occupational stress on depressive symptoms need to be taken into account. Job burnout has been widely confirmed as a mediator in the relation between occupational stress and depressive symptoms. However, job burnout might be a phase in the development of work-related depression [16]. The more severe job burnout is, the closer it is qualitatively to depression according to the symptoms [42]. The detrimental effects of occupational stress on depressive symptoms are still difficult to interfere by means of job burnout. Therefore, we should try to find more positive predictors and mediators to clarify the mechanism of the relation between occupational stress and depressive symptoms for achieving effective intervention for depressive symptoms.

The practical strategies aiming at developing employees’ PsyCap would help them better cope with various occupational stressors. In the present study, the results confirmed the negative association between PsyCap and depressive symptoms among both male and female doctors. On one hand, it is indicated that high level of PsyCap might be more likely to alleviate depressive symptoms. On the other hand, it is implied that PsyCap could become a new mediator in the occupational stress-depressive symptoms relation.

As a developable capacity, the level of PsyCap might be affected by various factors in workplaces. PsyCap is significantly negatively associated with the symptoms of stress and job stress from workload, career development, interpersonal relationship and work-family balance [25,37]. In the present study, we found that there were
significant negative associations between occupational stress and PsyCap for female doctors but not for the males. These results indicated that there would be a gender difference in the association between occupational stress evaluated by the ERI scale and PsyCap among Chinese doctors. One possible reason was that females might be more sensitive to the perceptions of occupational status than males. Hence more serious consequences might occur in females when male and female workers experienced the same level of occupational stress. Female doctors confronted more adverse factors than males in workplace settings, in terms of disdain, mistrust from the patients, uncertain job prospects, as well as dual responsibilities from career and family, likely leading to more attention on their vested interests, such as effort and reward and then affecting the PsyCap level at work. On the contrary, male doctors have more superiorities than females in workplaces. Furthermore, they always paid more attention to individual career development [43,44]. As a result, it is suggested that future research should focus on the gender difference in the antecedent variables of PsyCap in workplaces for the gender-appropriate PsyCap development strategies and practices.

It was the first study to confirm the mediation effect of PsyCap on the relation between occupational stress and depressive symptoms among Chinese female doctors. High extrinsic (ERR) and intrinsic (overcommitment) stress might reduce the level of PsyCap, thereby resulting in depressive symptoms in female doctors. As mentioned previously, PsyCap level could be developed through a variety of ways when its four constructs were combined into a higher-order construct [45]. Therefore, our results
have practical significance contributing to Chinese doctors, especially the females.

Based upon the results of this study, those strategies developed previously should be applied to Chinese doctors for improving their PsyCap level and even relieving depressive symptoms.

In spite of these merits, two limitations of the present study need to be elaborated. On one hand, our study was performed with the cross-sectional design that unable to draw the causal relations among study variables, but study hypotheses were built on solid theoretical and research foundation. The results from our cross-sectional study need to be confirmed in prospective setting. On the other hand, the study population was only comprised of the doctors from large general hospitals. A previous study found that the doctors from large general hospitals experienced more severe depressive symptoms in China [46]. Our study sample was representatively comprised of the majority of working doctors from large general hospitals in China. However, it is not clear whether the mediation effect of PsyCap on the relation between occupational stress and depressive symptoms could be extended to other occupational groups. Therefore, given the study’s limitation on study population, the results should be generalized with caution.

**Conclusions**

Both the extrinsic stress (ERR) and intrinsic stress (overcommitment) evaluated by the ERI scale were significantly associated with depressive symptoms within Chinese male and female doctors. For male doctors, ERR and overcommitment were not associated with PsyCap. Thus, there was no mediation effect of PsyCap on the
relation between occupational stress and depressive symptoms, even though the PsyCap was negatively associated with depressive symptoms. For female doctors, ERR and overcommitment were negatively associated with PsyCap, and the PsyCap was negatively associated with depressive symptoms. Thus, PsyCap partially mediated the relation between occupational stress and depressive symptoms. In addition to reducing the level of occupational stress through rationalizing workload, increasing work rewards, and avoiding overcommitment, PsyCap development should be included in the prevention and treatment strategies of depressive symptoms those designed for Chinese doctors, especially for the females.
Competing interests

The author(s) declare that they have no competing interests.

Authors’ contributions

LL designed the research, carried out data analysis and wrote the paper. LW provided guidance in study design, organized the investigation and was the corresponding author of the paper. YC and JLF provided help in the data collection, data analysis, results interpreting and paper writing. JNW provided help in the data collection and results interpreting. All authors read and approved the final manuscript.

Acknowledgments

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Figures

Figure 1: Theoretical model of PsyCap as mediator of the relation between occupational stress and depressive symptoms

PsyCap, psychological capital

c, associations between ERR, overcommitment and depressive symptoms; a, associations between ERR, overcommitment and PsyCap; b, associations between PsyCap and depressive symptoms after controlling for the predictor variables; c’, associations between ERR, overcommitment and depressive symptoms with PsyCap as mediator
### Table 1: Characteristics of subjects, and means and standard deviations (SDs) of variables

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>Mean Age</td>
<td>Mean Depressive symptoms</td>
<td>Mean ERR†</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(SD)</td>
<td>(SD)</td>
</tr>
<tr>
<td>Total</td>
<td>448</td>
<td>35.92 (7.62)</td>
<td>19.54 (10.54)</td>
<td>0.88 (0.22)</td>
</tr>
<tr>
<td>Marital status</td>
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<td></td>
<td></td>
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<tr>
<td>Single</td>
<td>91</td>
<td>29.20 (20.31)</td>
<td>19.31 (11.80)</td>
<td>0.83 (0.20)</td>
</tr>
<tr>
<td>Married</td>
<td>357</td>
<td>37.63 (79.69)</td>
<td>19.60 (10.21)</td>
<td>0.90 (0.22)</td>
</tr>
<tr>
<td>Education</td>
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<tr>
<td>Junior college or less</td>
<td>43</td>
<td>39.45 (9.60)</td>
<td>20.27 (11.17)</td>
<td>0.90 (0.26)</td>
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<tr>
<td>College</td>
<td>274</td>
<td>36.19 (61.16)</td>
<td>20.11 (10.69)</td>
<td>0.87 (0.17)</td>
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<tr>
<td>Graduate or more</td>
<td>131</td>
<td>34.15 (29.24)</td>
<td>18.10 (9.92)</td>
<td>0.90 (0.24)</td>
</tr>
</tbody>
</table>

ERR, effort/reward ratio; PsyCap, psychological capital
The mean of the ERR is logarithmic.
### Table 2: Correlations of variables

<table>
<thead>
<tr>
<th>Variables</th>
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<th>Females</th>
</tr>
</thead>
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<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1. Age</td>
<td>–</td>
<td>-0.027</td>
</tr>
<tr>
<td>2. Depressive symptoms</td>
<td>-0.024</td>
<td>–</td>
</tr>
<tr>
<td>3. ERR</td>
<td>0.090</td>
<td>0.427**</td>
</tr>
<tr>
<td>4. Overcommitment</td>
<td>0.134**</td>
<td>0.094</td>
</tr>
<tr>
<td>5. PsyCap</td>
<td>0.101*</td>
<td>-0.325**</td>
</tr>
</tbody>
</table>

ERR, effort/reward ratio; PsyCap, psychological capital

*p < 0.05, **p < 0.01
### Table 3: Regression analysis results, with depressive symptoms as outcome and PsyCap as mediator

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Path coefficients</th>
<th>a*b (BCa 95% CI)</th>
<th>$R^2$</th>
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<tbody>
<tr>
<td></td>
<td>$c$</td>
<td>$a$</td>
<td>$b$</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERR</td>
<td>0.439**</td>
<td>-0.053</td>
<td>-0.290**</td>
</tr>
<tr>
<td>Overcommitment</td>
<td>0.102*</td>
<td>0.093</td>
<td>-0.323**</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERR</td>
<td>0.430**</td>
<td>-0.301**</td>
<td>-0.272**</td>
</tr>
<tr>
<td>Overcommitment</td>
<td>0.177**</td>
<td>-0.116**</td>
<td>-0.368**</td>
</tr>
</tbody>
</table>

Psycap, psychological capital; ERR, effort/reward ratio

c, associations between ERR, overcommitment and depressive symptoms; a, associations between ERR, overcommitment and PsyCap; b, associations between PsyCap and depressive symptoms after controlling for the predictor variables; c’, associations between ERR, overcommitment and depressive symptoms with PsyCap as mediator; a*b, the product of a and b; BCa 95% CI, the bias-corrected and accelerated 95% confidence interval

Age, martial status, and education are covariates.

*p < 0.05, **p < 0.01
Step 1

Occupational stress → c → Depressive symptoms

Step 2

Occupational stress → a → PsyCap
PsyCap → b → Depressive symptoms
Occupational stress → c' → Depressive symptoms

Figure 1