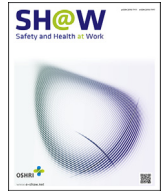




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Original article

## How Role Overload Affects Physical and Psychological Health of Low-ranking Government Employees at Different Ages: The Mediating Role of Burnout

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### ABSTRACT

**Background:** The public now imposes higher demands on the government than in the past, which has created the role overload faced by low-ranking government employees in China. This research investigates the relationship between role overload and health among low-ranking government employees and explores the mediating effects of burnout.

**Methods:** It draws on a survey of 2064 low-ranking government employees by probability proportionate to size sampling in China's Shandong Province. Structural equation modeling (SEM) methods are used to analyze the data.

**Results:** Both role overload and burnout were found to have negative effects on low-ranking government employees' health; however, the associations varied among the three age groups (less than 36, between 36 and 45, and over 45). Those over 45 reported the highest level of both physical and psychological health, while the youngest age group (less than 36) reported the lowest level of health. Role overload has a direct influence on health among government employees over 45 but not among those below 45. Burnout's mediating effects between role overload and health are significant among all age groups, but most significant among the youngest civil servants below 36.

**Conclusions:** The findings evidenced that both role overload and burnout affect low-ranking government employees' self-reported physical and psychological health. In addition, the effect of age differences in coping with role stressors and burnout should be considered.

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### 1. Introduction

Economic development, political reforms, and a more critical citizenry have meant that the public now imposes higher demands on the government than in the past. This puts government employees under greater work stress, especially those who are working at lower levels of the administrative system [1,2]. In many cases, low-ranking government employees, including those working at the town/sub-district level, have to work overtime to meet expectations from superiors, colleagues, and citizens, playing multiple roles such as diligent workers, professionals, service providers, and intermediaries [3,4]. Meanwhile, the resources low-ranking government employees have at their disposal to fulfill

responsibilities are usually limited, partly due to their low positions and powerless status [5,6]. This has created the role overload faced by low-ranking government employees, as their responsibilities often “exceed their available time, resources, and/or capability” [7,8]. Role overload can lead to anxiety, depression, headache, and various diseases, and therefore injures government employees' physical and psychological health [9,10]. This research focuses on the relationship between role overload and health among low-ranking government employees.

Existing empirical studies on role overload and health cover a wide range of social groups, but low-ranking government employees have thus far received little attention [11,12]. Shahram et al.'s [13] research with bank employees indicates that role overload, among other role stressors, directly contributes to anxiety, depression, and other negative emotional states. Drawing on studies of professional clergy in Hong Kong, Hang-yue et al. [14] find that role overload has negative effects on psychological health because it produces emotional exhaustion. By contrast, however,

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Store et al. [15] argue that for early-stage entrepreneurs, role overload may have a positive influence on physical and psychological health, given a cognitive process that transforms role stressors into passion and a sense of achievement. Among the few studies which focus on government employees, Alfes et al.'s [7] study on canton level government employees in Switzerland showed that role overload can erode employees' self-perceived health status, especially in the absence of a supportive team climate.

Burnout is another important factor in determining civil servants' health [16,17]. It is an overall negative mood characterized by "emotional exhaustion, depersonalization and personal accomplishment" [[18], p.2985]. For Jaracz et al. [19], civil servants' and nurses' work produced similar "altruistic anxiety" which endangers psychological health as a result of constant self-discipline and emotional burdens. Finney et al.'s [20] research shows that for correctional officials, insufficient organizational support and heavy work stressors lead to burnout, which further contributes to negative results such as "increased substance abuse, ... a decrease in organizational commitment, ... (and) lower productivity" [p.1]. Hao et al. [21] investigated 541 civil servants in Beijing, China and found that without a resilient personality, role overload and other work stressors will cause a series of problems such as depression, emotional exhaustion, and professional inefficacy (Figure 1).

In sum, existing literature scarcely addresses how role overload correlates with low-ranking government employees' burnout and self-reported health. However, this issue should be subjected to more attention because low-ranking government employees' health status significantly affects government performance as well as citizens' subjective well-being [22]. Also, less is known about how associations among role overload, burnout, and self-reported health varies among different age groups. This research will address these knowledge gaps. Specifically, its aims are:

- (1) To assess the direct influence of role overload on low-ranking government employees' self-reported physical and psychological health.
- (2) To examine the indirect effects of role overload on low-ranking government employees' physical and psychological health as mediated by burnout.
- (3) To explore relationships between role overload, burnout, and self-reported health in different age groups.

## 2. Materials and methods

### 2.1. Participants and procedure

Data was obtained from the 2019 government employees' quality of life survey in Shandong Province, China. Respondents were low-ranking government employees working at the town/sub-district level of government. The survey investigates variables

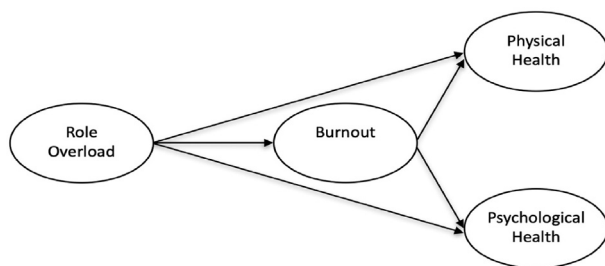


Fig. 1. Hypothesized model

including leadership, public service motivation, work overload, burnout, and health. Shandong Province consists of 16 municipal cities, has 100.7 million residents (the seventh national census), and employs approximately 200,000 low-ranking government employees at the town/sub-district level. The Probability Proportionate to Size sampling method was used to select 106 towns/sub-districts out of 16 municipal cities in Shandong Province, and 24 low-ranking government employees were chosen randomly from each town/sub-district. Questionnaires were distributed and collected by trained research assistants. All respondents were informed about their rights and asked to sign consent forms before filling out the questionnaires. Data collection was anonymous to keep confidentiality. In the end, 2544 questionnaires were distributed, and 2064 were returned after removing those uncompleted questionnaires (the valid response rate was 80.4 percent). The research was approved by the Academic Ethics Board of the School of Political Science and Public Administration, Shandong University.

### 2.2. Measurement of variables

#### 2.2.1. Physical and psychological health

Both physical and psychological health were assessed by the abbreviated version of the World Health Organization Quality of Life questionnaire (WHOQOL-BREF) [30]. Physical health was measured by seven items, such as: (1) "How satisfied are you with your sleep?" and (2) "How satisfied are you with your capacity for work?" A five-point Likert scale was used to rate the respondents' answers. Higher scores indicated a higher level of self-reported physical health. The Cronbach's alpha for the seven items of physical health was 0.811.

Psychological health was measured by using six items of the WHOQOL-BREF questionnaire [23]. These included: (1) "To what extent do you feel your life to be meaningful?" (2) "How much do you enjoy life?" and (3) "How satisfied are you with yourself?" All items were scored on a five-point Likert scale. Higher scores represented higher levels of self-perceived psychological health. The Cronbach's alpha for the six items of psychological health was 0.862.

#### 2.2.2. Role overload

Role overload was measured by employing Schaubroeck et al.'s [24] three-item scale: (1) "It often seems like I have too much work for one person to do everything well." (2) "The amount of work I am expected to do is too great." (3) "I never seem to have enough time to get everything done at work." The answers were assessed by a five-item Likert scale, ranging from strongly disagree (1) to strongly agree (5). Higher scores signified a higher level of role overload. The Cronbach's alpha for the three items of overload was 0.732.

#### 2.2.3. Burnout

The Maslach Burnout Inventory-General Survey (MBI-GS) [16] was employed to assess the level of burnout among respondents. Three dimensions of burnout were measured, including exhaustion (five items), cynicism (five items), and reduced professional efficacy (six items). Examples of these items include: (1) "I feel burned out from my work" (exhaustion), (2) "I have become less enthusiastic about my work" (cynicism), and (3) "In my opinion, I am not good at my job" (reduced professional efficacy). All items were scored on a seven-point Likert scale ranging from 1 ("never") to 7 ("every day"). Higher scores correspond to a higher level of burnout. The Cronbach's alphas of exhaustion, cynicism, and reduced professional efficacy were 0.961, 0.957, and 0.957 respectively, indicating high internal consistency.

### 2.3. Data analysis

SPSS version 21.0 and AMOS 21.0 were used for data analysis. Specifically, descriptive statistical analysis of the main variables was conducted by SPSS (see [appendix A](#)). To test the reliability and validity of the measurement model, confirmatory factor analysis and a comparison to seven alternative nested models were conducted using AMOS (see [appendices B and C](#)). Multiple-group analysis of structural equation modeling was employed by the maximum likelihood method to test the influence of role overload on physical and psychological health through mediation by burnout among low-ranking government employees at different ages (less than 36, 36–45 and over 45). Several indicators of overall goodness of fit were employed to test the fitness of the hypothesized model. These include the chi square test ( $\chi^2$ ), root mean square residual (RMR), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the incremental fit index (IFI), the normed fit index (NFI), the degree of freedom (DF), and the ratio of the chi-square to degrees of freedom ( $\chi^2/DF$ ). In addition, 95% bias-corrected confidence intervals with 5000 bootstrapped samples were used to test the mediation effect of burnout in the model.

### 3. Results

As for the socio-demographic characteristics of the sample (see [Table 1](#)), there were 1009 males and 1055 females, and approximately 65 percent of the respondents were Chinese Communist Party members. As for age, those who were “lower than 36”, “36–45” and “over 45” were 55.4 percent, 28.2 percent, and 16.4 percent, respectively. As [Table 1](#) shows, approximately 73 percent of the respondents were married. More than half of them had bachelor's degrees (59.4 percent), and 7.7 percent had a master's degree or doctorate. Approximately one-third (33.7 percent) of the

respondents reported an annual income below 42,000 RMB (6,511 USD), while more than 35.8 percent reported incomes between 42,001 to 54,000 RMB (6511–8372 USD), and 30.5 percent were higher than 54,000 RMB (8,372 USD). The average annual income of residents in 2019 in the Shandong Province was 33,000 RMB (5,116 USD) according to the National Bureau of Statistics.

As presented in [appendices B and C](#), the hypothesized four-factor model had a better fit to the data than alternative models ( $\chi^2(326) = 1197.36, p < 0.01$ ; CFI = 0.985; RMSEA = 0.036 and SRMR = 0.04). Based on the good reliability of the measured data, multiple-group analysis of structural equation modeling was used to identify the relationships between role overload, burnout (mediator), and health (self-reported physical and psychological) among different age groups. Some indices of goodness of fit for the model are presented in [Table 2](#). All model indices are within the acceptable range and show that the hypothesized model fits the data well.

The results of the standardized direct, indirect, and total effects of SEM are depicted in [Table 3](#). Role overload is positively and significantly correlated with burnout among low-ranking government employees at different ages ( $p < 0.001$ ). It also plays a more important role in explaining burnout among younger employees aged less than 36 years ( $\beta = 0.404$ ) than it does for the other two age groups ( $\beta = 0.340$  for the middle and  $\beta = 0.241$  for the older, respectively). While role overload has no significant relationship with self-reported health for those younger than 45 ( $p > 0.05$ ), it is directly and negatively associated with both physical health ( $\beta = -0.182$ ) and psychological health ( $\beta = -0.147$ ) among employees older than 45. Burnout is significantly and negatively associated with both physical and psychological health among all three age groups ( $p < 0.01$ ). Additionally, burnout has a negative and significant influence on physical and psychological health status, and the influence is greater in the youngest group ( $\beta = -0.397$  and  $\beta = -0.441$ ) than for those aged between 36 and 45 ( $\beta = -0.210$  and  $\beta = -0.274$ ) and those older than 45 ( $\beta = -0.200$  and  $\beta = -0.270$ ).

To test the mediation effect of burnout on the relationship between role overload and health, bias-corrected percentile bootstrapping at a 95% confidence interval with 5,000 bootstrap samples was employed. Results showed that the indirect effects of burnout are significant. Specifically, for low-ranking government employees aged less than 36, the indirect effects of role overload on both physical and psychological health through burnout were -0.0161 and -0.178; the 95% bias-corrected confidence intervals (CIs) were [-0.206, -0.121] and [-0.224, -0.140]. Among other age groups, the mediation effects of burnout were lower: -0.072 (physical) and -0.093 (psychological) for government employees aged between 36 and 45, and -0.048 (physical) and -0.065 (psychological) for government employees older than 45. The 95% bias-corrected CIs were [-0.116, -0.034] (physical) and [-0.141, -0.054] (psychological) for government employees aged 36 to 45 and [-0.052, -0.005] (physical) and [-0.094, -0.013] (psychological) for government employees older than 45, respectively.

The total effect of role overload on self-reported physical and psychological health is equal to the sum of the direct and indirect

**Table 1**  
Socio-demographic statistics for samples

Socio-demographic characteristic		Total samples (n = 2064)	%
Gender	Male	1009	48.9
	Female	1055	51.1
Age	Lower than 36	1143	55.4
	36–45	582	28.2
	Over 45	339	16.4
Marital status	Married	1502	72.8
	Other	562	27.2
Educational attainment	Lower levels (high school, junior college)	679	32.9
	Middle level (bachelor)	1226	59.4
	High level (Master and above)	159	7.7
Income level	RMB 0–42,000	695	33.7
	RMB 42,000–54,000	739	35.8
	RMB 54,000–	630	30.5
Political attainment	Communist Party members	1346	65.2
	Other	718	34.8

Source: Calculated by authors

**Table 2**  
The goodness of fit indices for SEM of physical and psychological health

Fit measure	Absolute fitness indices					Incremental fitness indices			DF	$\chi^2/DF$
	$\chi^2$ (Sig.)	RMR	GFI	AGFI	RMSEA	CFI	IFI	NFI		
Reference value	( $p > 0.05$ )	< 0.05	> 0.90	> 0.90	< 0.05	> 0.90	> 0.90	> 0.90	1–3	
Model	951.35*	0.02	0.951	0.923	0.029	0.970	0.970	0.952	360	2.64

Source: Calculated by authors

\*  $P < 0.01$ .

**Table 3**  
Standardized direct, indirect, and total effects of the hypothesized model

	Age: Less than 36			Age: 36–45			Age: More than 45		
	Standard estimates	Bias-corrected percentile 95% CI		Standard estimates	Bias-corrected percentile 95% CI		Standard estimates	Bias-corrected percentile 95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
<b>Standardized direct effects</b>									
Burnout < – Role overload	0.404* (p = 0.000)	0.342	0.465	0.340* (p = 0.000)	0.255	0.415	0.241* (p = 0.000)	0.112	0.363
Physical health < – Role overload	-0.008 (p = 0.246)	-0.068	0.083	-0.017 (p = 0.709)	-0.119	0.091	-0.182† (p = 0.036)	-0.360	-0.012
Psychological health < – Role overload	-0.064 (p = 0.235)	-0.005	0.139	-0.033 (p = 0.606)	-0.080	0.150	-0.147† (p = 0.043)	-0.304	-0.005
Physical health < – Burnout	-0.397* (p = 0.000)	-0.480	-0.310	-0.210† (p = 0.004)	-0.327	-0.093	-0.200† (p = 0.001)	-0.352	-0.041
Psychological health < – Burnout	-0.441* (p = 0.000)	-0.516	-0.359	-0.274* (p = 0.000)	-0.395	-0.150	-0.270* (p = 0.000)	-0.424	-0.116
<b>Standardized indirect effects</b>									
Physical health < – Role overload	-0.161* (p = 0.000)	-0.206	-0.121	-0.072* (p = 0.000)	-0.116	-0.034	-0.048† (p = 0.008)	-0.052	-0.005
Psychological Health < – Role overload	-0.178† (p = 0.001)	-0.224	-0.140	-0.093† (p = 0.002)	-0.141	-0.054	-0.065† (p = 0.002)	-0.094	-0.013
<b>Standardized total effects</b>									
Physical health < – Role overload	-0.161† (p = 0.004)	-0.227	-0.073	-0.072† (p = 0.004)	-0.187	-0.015	-0.230† (p = 0.009)	-0.400	-0.073
Psychological health < – Role overload	-0.178† (p = 0.004)	-0.186	-0.039	-0.093† (p = 0.001)	-0.166	-0.051	-0.213† (p = 0.003)	-0.356	-0.065

Source: Calculated by authors

Notes: Standardized estimation of 5000 bootstrap samples.

\* p < 0.001.

† p < 0.01.

‡ p < 0.05.

effects via burnout. Specifically, the total effects of role overload on physical health among low-ranking government employees aged less than 36 and those aged from 36 to 45 are -0.161 and -0.072, respectively, while its total effects on the psychological health of government employees in those groups are -0.178 and -0.093, respectively. Since its direct effects on both physical and psychological health were proved insignificant, it can be concluded that burnout plays a fully mediatory role in government employees aged less than 45 years. For low-ranking government employees over 45, however, burnout has significant direct effects on physical and psychological health, and thus its role is only partially mediatory. The total effects of role overload on self-reported physical and psychological health in the oldest age group are -0.230 and -0.213, respectively.

#### 4. Discussion

This research investigated the relationships between role overload and self-reported health among low-ranking government employees and explored the mediating effects of burnout. It drew on a survey conducted in Shandong Province, China, and used SEM methods to analyze the data. It contributes to our understanding of what affects low-ranking government employees' physical and psychological health among different age groups in China.

Its findings show that health status varies among low-ranking government employees in different age groups. Specifically, those over 45 reported the highest level of both physical and psychological health, while the youngest age group (less than 36) reported the lowest level of health. It appears that health status improves with increasing age. Among the three age groups (younger than 36, 36 to 45, and older than 45) role overload increases while feelings of burnout decrease with increasing age.

With regard to the first research aim, to assess the direct influence of role overload on low-ranking government employees'

self-reported physical and psychological health, the results show a direct relationship between role overload and health, but only among low-ranking government employees older than 45. A potential explanation is that age affects how individuals perceive and cope with role stressors [15,25]. For young government employees who are more ambitious to develop their careers, role overload may be perceived as a series of positive challenges and opportunities instead of hindrance stressors [26,27]. This cognitive process is termed by Lin and Ling [28] as “psychological empowerment,” which further galvanizes passions and contributes to psychological wellbeing and physical health. On the other hand, because those over 45 years old prefer work autonomy and a controllable work schedule to challenges and promotions, role overload is usually perceived by them as a burden which intensifies mental strain and leads to physical and psychological dysfunction [29,30].

With regard to the second research aim, to examine the indirect effects of role overload on low-ranking government employees' physical and psychological health as mediated by burnout, these findings indicate that burnout mediates between role overload and self-reported health in all three age groups based on the finding that 95% bias-corrected CIs did not contain a zero [31]. In addition, burnout's mediating effects are strongest among the youngest low-ranking government employees below 36 years of age and lowest among low-ranking government employees over 45. A possible explanation is that as age grows, government employees acquire certain personality traits and psychological capital that intensify their resilience in fighting work demands that would otherwise produce an accumulation of negative emotions [18,21]. In addition, compared to young government employees, older employees are more skillful in maneuvering organizational supports (such as superiors' appreciation and colleagues' friendship), which can buffer stressors and burnout's negative effects on health [32,33].



With regard to the last aim, to explore relationships between role overload, burnout, and self-reported health in different age groups, these findings lead to the conclusion that among different age groups of low-ranking government employees, the associations between role overload, burnout, and self-reported health are different. The self-perceived physical and psychological health of those over 45 years old are directly affected by role overload, while for those between 36 to 45, health status is more sensitive to burnout.

In sum, this research concludes that role overload and burnout affect low-ranking government employees' self-reported physical and psychological health. The association between role overload, burnout, and self-reported health are different among different age groups. In terms of its practical implications, this research suggests that multiple management tools are required to relieve low-ranking officials' work pressure and improve their health. These include making realistic work schedules, decreasing long working hours, and implementing proper incentive mechanisms to cater to low-ranking government employees. It is notable that the relationship between role overload, burnout, and health consequences varied among different age groups.

Limitations of the current study should also be considered. Firstly, the sample was collected from one province in China, which might affect the generalizability of results. Replicating the survey in other provinces and countries would be helpful to improve the generalizability of the findings. In addition, because the data are cross-sectional, the causal relationship between role overload and health cannot be determined; a longitudinal study is needed to shed light on the causal relationship. In addition, common-method variance (CMV) issues should also be considered due to the single-sourced and self-reported data collection process. Although the results of the CMV test by Harman's single factor testing proved it did not seriously affect the research findings, future studies should consider collecting data from multiple sources. Finally, the influence of comorbidity or multimorbidity on work overload and self-perceived health should also be considered. Existing work indicates that government employees, especially the older-aged group are suffering from comorbidity or multimorbidity such as migraines, insomnia, hypertension, and stroke [34,35], which have been shown to have a negative influence on work overload and health status [36]. Whether, and how comorbidity or multimorbidity affect low-ranking government employees' workload and self-perceived health status signify a potential and interesting topic for future studies.

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## Conflicts of interest

No conflict of interest exists in the submission of this manuscript, and manuscript is approved by all authors for publication. We also declare that we do not have any commercial or associative interest that represents a conflict of interest in connection with the work submitted.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.shaw.2022.02.002>.

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