

The Impact of Psychological Contract, Physical and Mental Health on Burnout in Grassroots Civil Servants: Evidence from China

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Introduction: The report of the 20th Party Congress proposes to build a high-quality cadre capable of taking on the important task of national rejuvenation. Grassroots civil servants are facing great pressure and challenges, and alleviating burnout has become an important issue in the construction of grassroots civil servants. Empirically analysing the impact of psychological contract on burnout of grassroots civil servants in the Chinese context will help to build a high-quality grassroots civil service team.

Methods: Using a sample of 1824 grassroots civil servants in China, this study empirically examined the effect of the psychological contract on burnout among grassroots civil servants using the OLS methodology, conducted a robustness test by way of substituting variables and research methods, and then discussed the mediating effect of physical and mental health in the psychological contract and burnout among grassroots civil servants.

Results: The study showed that grassroots civil servants' psychological contract had a significant negative impact on burnout; transactional psychological contract was positively related to burnout, and relational and developmental psychological contracts were negatively related to burnout in grassroots civil servants. The results of the heterogeneity analysis showed that the effect of psychological contract on burnout differed by age, gender, exercise frequency, and sleep status. The results of the mediation analysis showed that higher psychological contract scores were related to better physical and mental health, thus inhibiting burnout among grassroots civil servants. This indicates a significant mediation effect of physical and mental health in the relationship between psychological contract and burnout of grassroots civil servants.

Conclusion: The psychological contract of grassroots civil servants has a significant negative effect on burnout, and physical and mental health mediate between the two. These conclusions are of great theoretical and practical significance for alleviating the stress of grassroots civil servants and improving their work performance.

Keywords: psychological contract, grassroots civil servants, burnout, physical and mental health

Introduction

The report of the 20th Party Congress of the Chinese Communist Party proposes to build a high-quality cadre that can bear the heavy responsibility of national rejuvenation. As the "nerve end" of China's state governance, grassroots civil servants have the closest contact with the people. Their political quality, professionalism, and psychological health affect not only the image of the Party and the government in the minds of the public but also the performance of policies and the level of public services.¹ With the gradual advancement of Chinese modernisation, the work at the grassroots level has become increasingly urgent and arduous, leading to burnout among grassroots civil servants, which results in a lack of achievement and a weak sense of responsibility. Alleviating the burnout of grassroots civil servants has become an important issue in the construction of grassroots civil servants in the new era. However, looking at the existing literature, many studies have shown that psychological contract destruction is one of the important causes of employee burnout, but few studies have explored the relationship between the heart contract and burnout with grassroots civil servants as the research object. In this context, exploring the relationship between psychological contract and burnout among Chinese grassroots civil servants can not only

provide new ideas and methods for building a high-quality grassroots civil service team, but also enhance the image of grassroots civil servants in the eyes of the general public to a certain extent, and truly guard the people's aspirations for a better life. Against this background, this study empirically examines and analyses the effect of psychological contract on burnout among grassroots civil servants, while introducing the mediating role of physical and mental health, and offers a theoretical basis for delineating the relationship between burnout and emotion management in grassroots civil servants in the new era.

The marginal contributions of this study can be summarized as follows: first, it empirically investigates how psychological contracts affect burnout among grassroots civil servants in China. Thirdly, explores the mechanism of influence between psychological contract and burnout in grassroots civil servants, verifies the mediating role of physical and mental health, and helps to clarify the relationship between psychological contract and burnout in grassroots civil servants providing a new empirical basis. The article is organised as follows: Part 2 develops the literature review on burnout and psychological contract; Part 3 introduces the data sources, explains the main variables, and constructs the econometric model for this study; Part 4 presents the findings and analyses them; Part 5 presents the research discussion; and Part 6 draws the conclusions of the study.

Literature Review

Burnout, also known as “job burnout”, is a term used to describe a state of fatigue caused by stress in the service industry. Maslach et al proposed a three-dimensional definition of burnout as an extreme state of emotion, attitude, and behaviour resulting from an individual's chronic inability to cope with work stress;² the three sub-dimensions of burnout are emotional exhaustion, depersonalisation, and low personal fulfilment. Pines and Aronson argue that burnout is a state of physical exhaustion, emotional depletion, and mental fatigue that occurs when practitioners experience a chronic over-expenditure of emotional resources. Burnout is most likely to occur in specific “people-oriented” groups such as police officers^{3,4} teachers,^{5–7} nurses,^{8,9} and public employees.¹⁰ The causes of burnout in these groups are diverse and complex, and include social, organisational, personal, and structural characteristics of work. For example, Yu et al identified a lack of job support, narrow promotion channels, and informal promotion mechanisms as the main causes of burnout in grassroots civil servants.¹¹ Xie categorised the causes of burnout in grassroots civil servants as expectation bias and role conflict at the individual level, weak mechanisms and inconsistent authority and responsibility at the organisational level, insufficient resources and excessive pressure at the environmental level, and excessive expectations and insufficient support at the social level.¹²

The psychological contract is a concept pioneered by the American organisational behaviourist Chris Argyris and introduced into the field of management in the early 1960s. It refers to an expectation that exists between an organisation and its members that is distinct from an economic contract and cannot be written down¹³ and is the sum of implicit, unstated mutual expectations between the organisation and its employees. Psychological contracts can be categorized as transactional and relational. Psychological contracts are currently defined both broadly and narrowly. Psycho-logical contract in its broad sense takes a bilateral perspective and emphasises the subjective understanding of the mutual responsibilities and obligations of both the organisation and the employee in the exchange relationship; this definition is consistent with the meaning of psychological contract when it was first proposed. The narrow definition of psychological contract considers it a one-way relationship and emphasises an employee's understanding of their mutual obligations in an exchange relationship.¹³ The narrow school of thought shifts the perspective of psychological contract research from two parties to an individual employee, making the definition simpler and easier to apply in empirical research. The psychological contract is a key variable in explaining employees' attitudes and behaviours. It influences employees' psychological and behavioural aspects, such as organisational commitment,¹⁴ job satisfaction,¹⁵ subjective well-being,¹⁶ turnover,¹⁷ and job deviant behaviour.^{18,19} Burnout as a personal response manifests itself in the form of a loss of enthusiasm for work, a negative approach to work and colleagues, and a negative evaluation of oneself and one's work. There is an extensive literature which confirms that psychological contract breakdown is a key factor in employee burnout. For example, Chambel found that psychological contract violations increased burnout levels in a sample of military personnel on peacekeeping missions.²⁰ Kang et al found that the level of psychological contract predicted the tendency to burnout and that teachers with low psychological contracts were more likely to experience burnout.²¹ Lee reported that the psychological contract of bank employees had a significant impact on their work ethic and attitude towards work.^{22,23}

The physical and mental health of employees can influence their relationship with the organisation, as well as their emotions, attitudes, and behaviour. Virtanen et al found a significant positive relationship between health and workers' negative emotions such as anxiety and depression.²⁴ Capone V. found a significant positive correlation between health levels and burnout levels.²⁵ On the other hand, physical and mental health has a negative impact on burnout.²⁶ Furthermore, San-tana et al found that physical and mental health had a greater impact on burnout in female teachers than in men.²⁷ Although studies have verified the close relationship between psychological contract and burnout, there is a lack of research on the effect of psychological contract on burnout among grassroots civil servants in the Chinese context, using physical and mental health as a mediator. This study argues that the psychological contract of grassroots civil servants is significantly related to burnout and that physical and mental health plays an important mediating role. When civil servants at the grassroots level perceive a breach in their psychological contract, it leads to dissatisfaction, loss of enthusiasm, and consequently, boredom and cynicism in their work. Therefore, this study conducts an empirical analysis of civil servants at the grassroots level in China to address the following questions: first, does psychological contract have an impact on burnout among grassroots civil servants? Second, if there is an effect, are the findings robust? Third, is the impact of psychological contract on burnout among grassroots civil servants influenced by gender, age, exercise frequency, and sleep status? The theoretical framework is indicated in the diagram below (Figure 1).

Methods

Data Sources

In this research, in-depth interviews were conducted with 20 grassroots civil servants before the formal questionnaire survey to understand the basic situation of psychological contract and burnout among grassroots civil servants. It was found that grassroots civil servants suffered from a certain degree of burnout in their daily work. Factors such as transactional responsibility, developmental responsibility, relational responsibility, and physical and mental health all affected burnout at the grassroots level. After completing the first draft of the questionnaire, to ensure the quality of the responses, the grassroots

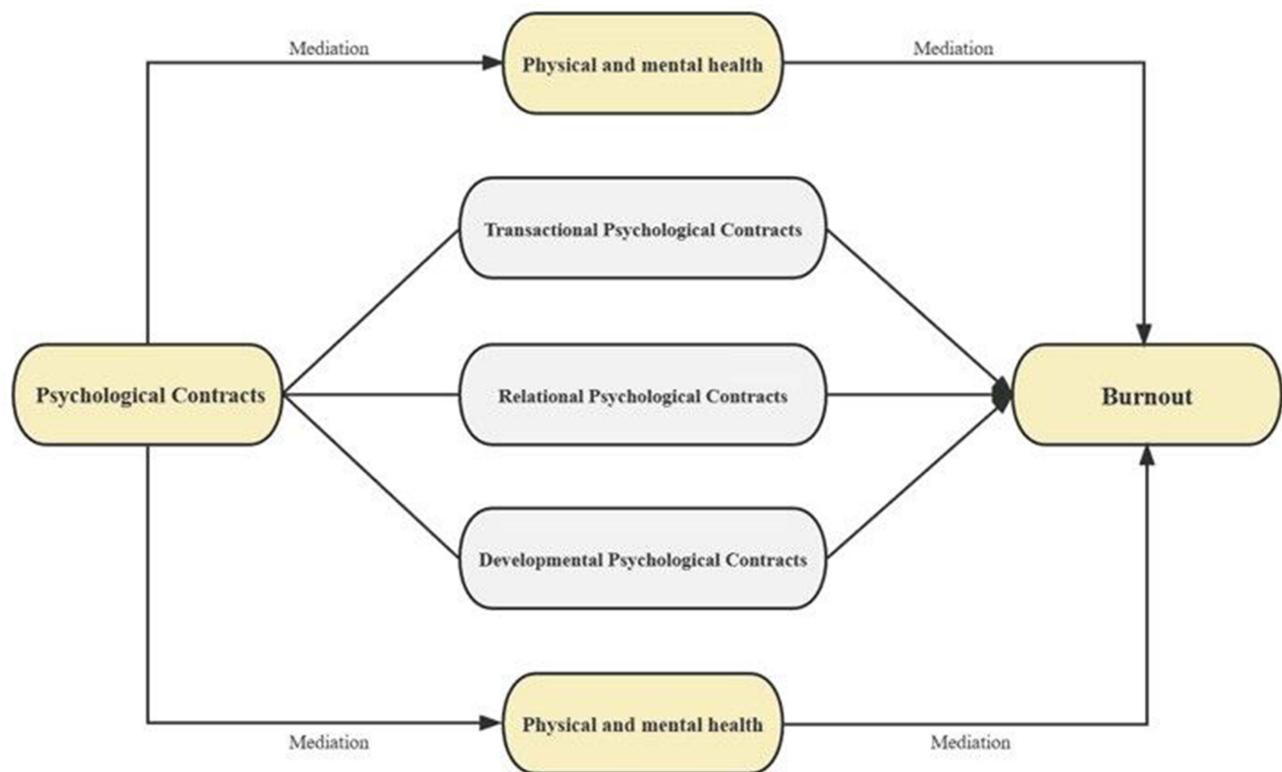


Figure 1 Theoretical framework chart.

civil servants were asked their opinions and the language used in some of the questions was revised to ensure that the questions were more in line with the actual situation of civil servants at the grass-roots level in China.

Survey of grassroots civil servants in the central provinces of China starting in November–December 2022. The survey was conducted using an online anonymous electronic questionnaire and the respondents mainly included grassroots civil servants from different government departments such as traffic police, market regulators, administrative law enforcement officers, street clerks, government service hall staff, and party office staff. A total of 1900 questionnaires were distributed; after excluding invalid questionnaires with short response time and consecutive answers, 1824 questionnaires were finally collected, with a response rate of approximately 96%. Among the total, 1056 are men and 768 are women; 144 are junior colleges or below, 976 are undergraduates, 672 are masters, and 32 are doctors; 297 are 25 years old or below, 983 are between 26 and 34 years old, 384 are between 35 and 44 years old, 128 are between 45 and 54 years old, and 32 are 55 years old or above; 512 have been working for less than 3 years, 368 for 3–5 years, 416 for 5–10 years, 304 for 10–15 years, and 224 for more than 15 years. The number of persons who have worked for less than 3 years is 512, for 3–5 years 368, for 5–10 years 416, for 10–15 years 304, and for more than 15 years 224.

Variable Design

Explanatory Variable

In this study, the three-dimensional psychological contract scale proposed by Li²⁸ and Xiang,²⁹ combined with the Delphi method and linked to the development practice of Chinese grassroots civil servants in the new era, was used to make targeted modifications to the psychological contract survey scale for grassroots civil servants, finally obtaining three dimensions and 15 items. The first dimension, relational psychological contract, focuses on the satisfaction of grassroots civil servants' sense of identity and belonging; the transactional psychological contract focuses on the satisfaction of grassroots civil servants' basic material and living conditions; and the developmental psychological contract focuses on grassroots civil servants' need for personal development. Items are scored on a five-point Likert scale, with higher scores indicating a stronger psychological contract between grassroots civil servants and the government organisation. The variable reliability test found that the overall questionnaire and each dimension Cronbach's α were greater than 0.850, and the F-test results reached a highly significant level ($P < 0.01$), demonstrating that the scale has a good reliability. The Cronbach's alpha is 0.878, demonstrating the psychological contract scale's high level of internal consistency.

Explained Variables

The core explanatory variable in this study is burnout. Referring to the Burnout Scale developed by Xie Zhiju and Zhu Shaohao, the Burnout Measurement,¹² and the questions related to the relevant variables were modified to match the working practices of Chinese grassroots civil servants, resulting in three dimensions and 15 questions on the burnout scale. The variable reliability test found that the overall questionnaire and the dimensions Cronbach's α were greater than 0.90, demonstrating that the scale has good reliability. The Cronbach's alpha is 0.878, demonstrating the psychological contract scale's high level of internal consistency.

Intermediate Variables

The mediating variable in this study is the physical and mental health of civil servants. Referring to Zhang³⁰ study, two questions were set: "How often your work or daily activities were affected by physical health reasons in the past month" and "How often your work or daily activities were affected by depression or bad mood in the past month".

Control Variables

Based on existing studies, demographic variables included gender, age, marital status, education, and monthly income,^{31–35} and job status was represented by political appearance, administrative rank, and length of service.^{16,36,37} In addition, considering that burnout in grassroots civil servants is closely related to lifestyle, physical exercise, stress, and sleep were also included as control variables.^{38–40} The descriptive statistics of the variables are presented in Table 1.

Table 1 Results of Descriptive Statistics for the Sample

Variable	Variable Definition	OB	Mean	SD
Explained Variables				
Civil servants burnout	0–6, with higher scores indicating greater burnout	1824	47.421	16.695
Explanatory variables				
Transactional Psychological Contract	1–5, with higher scores indicating a stronger transactional psychological contract	1824	11.386	3.596
Relational psychological contract	1–5, with higher scores indicating a stronger relational psychological contract	1824	19.439	5.169
Developmental Psychological Contract	1–5, with higher scores indicating a stronger developmental psychological contract	1824	15.096	4.888
Control Variables				
Gender	Female = 1, Male = 2	1824	1.421	0.494
Age	Under 25 years = 1, 25–34 years = 2, 35–44 years = 3, 45–54 years = 4, 55+ years = 5	1824	2.324	0.789
Marital Status	Unmarried = 1, Married = 2, Other = 3	1824	1.465	0.533
Educational level	College and below = 1, Bachelor = 2, Master = 3, Doctor = 4	1824	2.443	0.679
Monthly income	Under 5000 = 1, 5000–8000 = 2, 8000–11,000 = 3, 11,000 and above = 4	1824	3.692	1.312
Years of work	Less than 3 years=1, 3–5 years=2, 5–10 years=3, 10–15=4 years, more than 15 years=5	1824	2.649	1.363
Administrative level	Clerk=1, section officer=2, deputy section=3, section, deputy division and above=4	1824	2.394	1.089
Exercise	Less than 3 times=1, 3–5 times=2, more than 5 times=3	1824	1.307	0.532
Pressure situation	No = 0, Yes = 1	1824	0.086	0.280
Sleep conditions	No = 0, Yes = 1	1824	0.057	0.232

Model Construction and Interpretation

The explanatory variables in this study can be regarded as ordered response variables; therefore, this study uses the ordinary least squares (OLS) method to investigate the relationship between psychological contract and burnout among grassroots civil servants. The probit model is used to test the robustness of the effect of psychological contract on burnout among grassroots civil servants.

OLS Model

$$\text{Burnout}_i = \alpha_1 + \beta_1 \text{Psychological contract}_i + \gamma_1 X_i + \delta_i \quad (1)$$

In (Equation 1), Burnout_i is the explanatory variable burnout; $\text{Psychological contract}_i$ is the explanatory variable burnout; X_i represents a series of control variables such as demographic characteristics, work situation, and personal characteristics; β_1 and γ_1 represent the coefficients to be estimated in the regression equation; δ_i is the random error term.

Probit Model

$$\text{Burnout}_i^* = \alpha_1 + \mu_1 \text{Psychological contract}_i + \mu_1 X_i + \delta_i \quad (2)$$

In (Equation 2), Burnout_i^* is the latent variable of burnout for the i th grassroots civil servant, and the relationship between Burnout_i^* and $\text{Psychological contract}_i$ is as follows:

$$\begin{aligned} \text{Burnout}_i &= 0, \text{Burnout}_i^* \leq \varphi_0 \\ \text{Burnout}_i &= 1, \varphi_0 < \text{Burnout}_i^* \leq \varphi_1 \\ \text{Burnout}_i &= 2, \varphi_1 < \text{Burnout}_i^* \leq \varphi_2 \\ \text{Burnout}_i &= 3, \varphi_2 < \text{Burnout}_i^* \leq \varphi_3 \\ \text{Burnout}_i &= 4, \varphi_3 < \text{Burnout}_i^* \leq \varphi_4 \\ \text{Burnout}_i &= 5, \varphi_4 < \text{Burnout}_i^* \leq \varphi_5 \\ \text{Burnout}_i &= 6, \varphi_5 < \text{Burnout}_i^* \leq \varphi_6 \end{aligned} \quad (3)$$

In (Equation 3), $\varphi_0, \varphi_1, \varphi_2, \varphi_3, \varphi_4, \varphi_5$ and φ_6 are the six critical points, and when δ_i obeys the standard normal distribution, then the model can be transformed as follows:

$$\begin{aligned} P(\text{Burnout} = 1) &= \omega(\varphi_0 - X\beta) \\ P(\text{Burnout} = 2) &= \omega(\varphi_1 - X\beta) - (\varphi_0 - X\beta) \\ P(\text{Burnout} = 3) &= \omega(\varphi_2 - X\beta) - (\varphi_1 - X\beta) \\ P(\text{Burnout} = 4) &= 1 - \omega(\varphi_3 - X\beta) \end{aligned} \quad (4)$$

Psychological contractual behaviour can be influenced by individual factors such as age and gender, and is a choice made by individuals according to their circumstances. Therefore, the model is prone to endogeneity problems due to sample selection bias. To control sample selection bias in model estimation, the propensity score matching (PSM) model was used to estimate the net effect of psychological contract on burnout among grassroots civil servants. A staged analysis using PSM is used to reduce the influence and interference of other factors on the study sample. The sample is divided into treatment and control groups. Following is the setup of the model:

$$Y_i = Y_{0i} + (Y_{1i} - Y_{0i})D_i \quad (5)$$

$$\text{ATT} = E(Y_{1i} - Y_{0i} | D_i = 1) \quad (6)$$

In (Equation 5), D_i indicates treatment of individual i , and 1 indicates that individual i belongs to the experimental group, while 0 indicates that individual i belongs to the control group. In (Equation 6), the net effect of psychological contract on burnout is determined by the average treatment effect (ATT) of the treatment group.

Results

Baseline Regression Results

Models (1) and (2) in Table 2 report the results of the OLS benchmark model estimation. Transactional psychological contract has a significant positive effect on burnout among Chinese grassroots civil servants, and relational and developmental psychological contracts have a significant negative effect on burnout. For Model (1), when no control variables were included, the relational psychological contract showed a positive correlation at the 1% level for grassroots civil servants; the relational and developmental psychological contracts showed a negative correlation at the 1% level for

Table 2 Baseline Regression Results for the Effect of Psychological Contract on Burnout in Grassroots Civil Servants

Variables	Model (1)	Model (2)	Model (3)
	Burnout	Burnout	Burnout
Transactional psychological contract	0.467*** (0.112)	0.571*** (0.108)	0.691*** (0.107)
Relational psychological contract	-1.117*** (0.099)	-1.001*** (0.113)	-1.027*** (0.101)
Developmental Psychological Contract	-1.390*** (0.103)	-1.406*** (0.103)	-1.385*** (0.098)
Gender		0.025 (0.709)	1.139 (0.694)
Age		3.412*** (0.623)	4.172*** (0.629)
Marital Status		0.496 (0.709)	0.630 (0.689)
Educational level		0.685 (0.056)	0.568 (0.551)
Monthly income		0.826** (0.027)	0.776*** (0.269)
Administrative level		2.680*** (0.415)	2.678*** (0.406)
Years of work		-0.579 (0.428)	-1.368** h (0.423)
Political affiliation		2.054*** (0.306)	2.141*** (0.305)
Exercise			3.454*** (0.545)
Pressure situation			2.191*** (0.291)
Sleep			-1.124 (0.644)
Sample Size	1824	1824	1824
Adj-R2	0.420	0.489	0.520

Note: **p < 0.01, ***p < 0.001.

grassroots civil servants. For Model (2), the coefficient of the effect of transactional psychological contract on burnout rises to 0.571, relational psychological contract rises to -1.001, and developmental psychological contract falls to -1.406 after the inclusion of control variables such as individual characteristics. For Model (3), the coefficient of the effect of transactional psychological contract on burnout rises to 0.691, and that of relational and developmental psychological contracts falls to -1.027 and -1.385, respectively, when the control variables of exercise, stress, and sleep are included. Thus, the results show that psychological contract has an overall significant negative impact on burnout among grassroots civil servants.

The measurement results of the control variables are generally in line with the expectations. Age is positively related to burnout, indicating that grassroots civil servants are more prone to burnout as they grow older; income has a positive effect on burnout at the 5% level, indicating that higher income of grassroots civil servants will contribute to higher psychological expectations and more severe burnout; executive rank positively affects burnout at the 1% level, which indicates that higher executive rank makes burnout more likely; more stressed civil servants are more likely to suffer from burnout compared to less stressed civil servants, and those with more frequent insomnia suffer from burnout compared to those with less frequent insomnia.

Robustness Test

To further test the robustness of the results on the effect of psychological contract on burnout among grassroots civil servants in China, this study used the Oprobit model as a replacement measure considering that the explanatory variables in the study are multicategorical in nature. The three dimensions of “emotional exhaustion”, “dehumanization”, and “low achievement” were replaced by “burnout” for robustness testing. The results showed that transactional psychological

contract had a significant positive effect on emotional exhaustion, dehumanization, and low sense of achievement of grassroots civil servants at the 1% level; relational psychological contract had a significant negative effect on emotional exhaustion, dehumanization, and low sense of achievement; developmental psychological contract had a significant negative effect on emotional exhaustion, dehumanization, and low sense of achievement (see Table 3). A comparison of Models (1)–(3) with Models (4)–(6) shows that the results are generally consistent with the benchmark regression results, indicating good robustness of the study model.

Net Effect of Psychological Contract on Burnout Among Grassroots Civil Servants

The psychological contract of grassroots civil servants is influenced by their personal choices and other factors, and the estimation results may cause endogeneity problems due to sample self-selection. In this study, K-nearest neighbour matching, radius-nearest neighbour matching and sum matching PSM methods were applied to deal with the bias in the estimation results. As can be seen from Table 4, the standard deviations for most variables were less than 5% after matching, while the differences between the control and treatment groups for each variable were not significant after matching, and the self-selection bias was largely eliminated and the samples passed the balance test. In addition, the kernel density functions before and after matching, Figures 2 and 3, show that the curves of the matched treatment (Figures 2) and control groups (Figures 3) overlap better and follow a closer trend, indicating that there are no systematic differences between the matched treatment and control groups and that the matching is better.

According to Table 5, the ATT of matching methods such as K-nearest neighbour matching, radius-neighbour matching, and kernel matching is significant with ATT values of 0.032, 0.032, and 0.035, respectively, which shows

Table 3 Results of Robustness Test for the Effect of Psychological Contract on Burnout Among Grassroots Civil Servant

Variables	Model (4)	Model (5)	Model (6)
	Emotional Exhaustion	De-Humanise	Low Sense of Accomplishment
Transactional psychological contract	0.046* (0.043)	0.059* (0.040)	0.193*** (0.036)
Relational psychological contract	−0.192*** (0.053)	−0.359*** (0.048)	−0.355*** (0.046)
Developmental Psychological Contract	−0.601*** (0.056)	−0.576*** (0.050)	−0.503*** (0.052)
Gender	0.113* (0.073)	0.135* (0.078)	−0.171** (0.080)
Age	0.262*** (0.056)	0.111** (0.059)	0.270*** (0.060)
Marital Status	−0.158** (0.062)	0.389*** (0.062)	0.086* (0.065)
Educational level	0.024* (0.051)	0.155** (0.048)	0.087* (0.048)
Monthly income	0.046** (0.021)	0.171*** (0.025)	0.020 (0.024)
Administrative level	0.152*** (0.037)	0.213*** (0.037)	0.252*** (0.039)
Years of work	−0.173*** (0.035)	−0.015 (0.040)	−0.107*** (0.036)
Political affiliation	0.227*** (0.028)	0.192*** (0.025)	0.089*** (0.029)
Exercise	0.189*** (0.058)	0.484*** (0.049)	0.364*** (0.047)
Pressure situation	0.493*** (0.032)	0.119*** (0.033)	−0.005 (0.037)
Sleep	0.037 (0.061)	0.103 (0.061)	−0.028 (0.059)
Sample Size	1824	1824	1824
Adj-R2	0.177	0.201	0.158

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

Table 4 Sample Matching Quality Balance Test

Variables	Matching Situation	Average Value		Rate (%)	Reduction Rate (%)	t-Test	
		Treated	Control			T	P> t
Gender	Before	1.5	1.38	44.9	92.8	9.14	0.000
	After	1.45	1.5	-4.5		-2.09	0.337
Age	Before	2.1389	2.6429	-64.9	94.0	-13.82	0.000
	After	2.2273	2.2576	-3.9		-1.13	0.259
Marital status	Before	1.5139	1.381	25.1	54.4	5.18	0.000
	After	1.5	1.4394	11.4		2.71	0.176
Years of work	Before	2.3889	3.0952	-53.9	93.6	-11.02	0.000
	After	2.4848	2.5303	-3.5		-0.79	0.430
Educational level	Before	2.375	2.2381	21.9	86.7	4.41	0.003
	After	2.3485	2.5152	-4.7		-5.90	0.875
Administrative level	Before	2.2917	2.5714	-25.8	83.8	-5.33	0.000
	After	2.3788	2.4242	-4.2		-0.94	0.349
Political affiliation	Before	0.067	0.012	56.0	93.4	19.13	0.000
	After	0.067	0.109	3.6		0.77	0.529
Monthly income	Before	3.5139	4	-37.1	63.7	-7.75	0.000
	After	3.6176	3.7941	-3.5		-2.90	0.004
Exercise	Before	1.25	1.4048	-28.3	81.0	-6.05	0.000
	After	1.2647	1.2941	-5.4		-1.16	0.245
Pressure situation	Before	3.1528	3.2619	-10.1	58.3	-2.09	0.037
	After	3.2273	3.2727	-4.2		-0.99	0.322
Sleep	Before	1.7083	1.4048	64.1	90.3	13.35	0.000
	After	1.6912	1.7206	-6.2		-1.51	0.132

that the results obtained through PSM are robust, and if sample selection bias is not eliminated, the inhibitory effect of psychological contract on burnout among.

Heterogeneity Analysis

The above findings discussed the effect of psychological contract on burnout among grassroots civil servants but did not consider the differences between individual characteristics and life habits, such as age and gender. Therefore, we further examined the heterogeneous effects of psychological contracts on burnout among Chinese grassroots civil servants based on six aspects including exercise, sleep, age, and gender. The specific estimation results are shown in [Table 6](#) and [Table 7](#).

According to the results in [Table 6](#), transactional psychological contract is positively related to burnout at the 1% level for grassroots civil servants under 35 years of age and negatively related to burnout at the 1% level for those aged above 35 years; most grassroots civil servants over 35 years of age are well established and have a family, and the higher the salary offered by the organisation, the lower the burnout among grassroots civil servants. Relational psychological

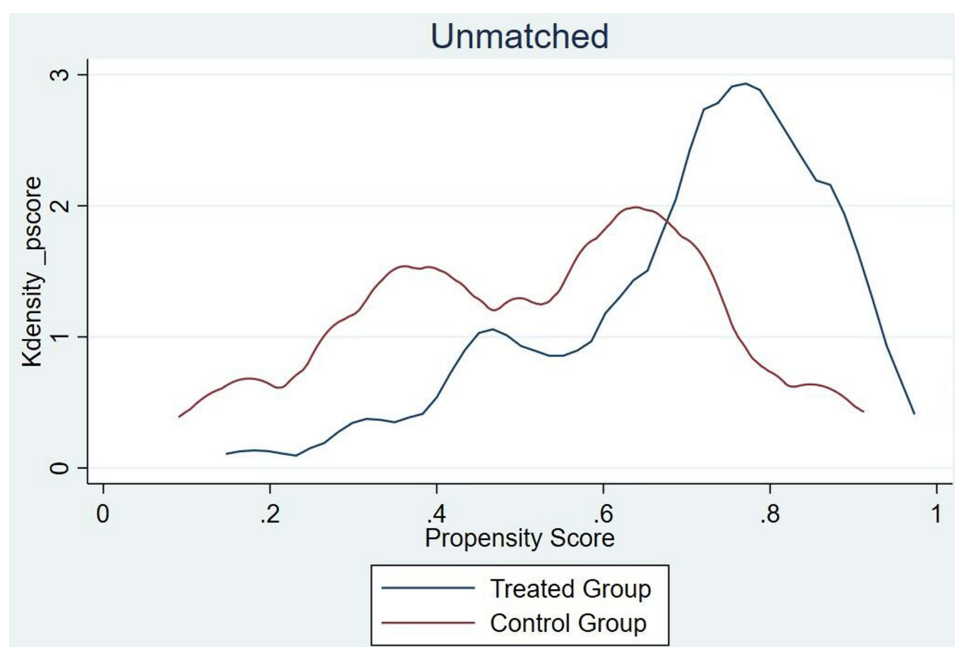


Figure 2 Kernel density function plot before matching.

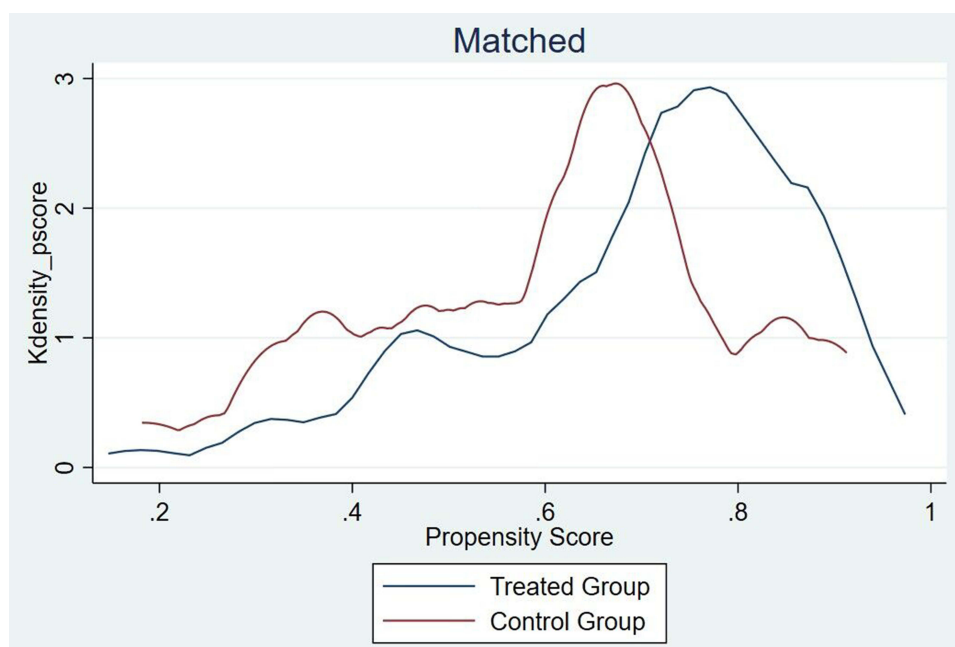


Figure 3 Kernel density function plot after matching.

contract has a more significant negative effect on burnout for grassroots civil servants over 35 years of age; the older the civil servants, the more they pursue a better relationship at work, and the less severe the burnout. Developmental psychological contract is positively related to burnout among grassroots civil servants over 35 years of age and negatively related to those under 35 years old; the younger the civil servants over 35 years old, the more they focus on personal development opportunities, and the more the development opportunities in the organisation, the less the burnout. In terms of gender, the negative effect of transactional psychological contract on burnout is higher for male than female junior civil servants, indicating that the higher the level of pay and benefits in the organisation, the lower the

Table 5 Propensity Score Matching Results

	Burnout			
	Treated	Control	ATT	SE
Before	2.816	2.901	0.028	0.046
After				
K-Nearest Neighbour Matching	2.816	2.875	0.032	0.049
Radius neighbour matching	2.816	2.872	0.032	0.051
Kernel matching	2.816	2.873	0.035	0.048

Table 6 A Test of Heterogeneity Across Literacy and Gender

Variables	By Age		By Gender	
	Age <35	Age ≥35	Female	Female
	Burnout		Burnout	
Transactional psychological contract	0.111*** (0.030)	-0.706*** (0.056)	-0.048* (0.052)	-0.284*** (0.041)
Relational psychological contract	-0.146*** (0.036)	-0.425*** (0.054)	0.107* (0.059)	-0.511*** (0.045)
Developmental Psychological Contract	-0.339*** (0.030)	0.037* (0.070)	-0.571*** (0.039)	-0.129** (0.051)
Control Variables	Yes	Yes	Yes	Yes
Adj-R2	0.4894	0.7961	0.5051	0.6403

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

Table 7 A Test of Heterogeneity in Exercise and Sleep

Variables	Exercise		Sleep	
	Less Than 3 Times	More Than 3 Times	Insomnia	No Insomnia
	Burnout		Burnout	
Transactional psychological contract	-0.128** (0.061)	-0.087** (0.035)	-0.057* (0.060)	-0.162*** (0.036)
Relational psychological contract	-0.285* (0.063)	-0.112*** (0.042)	-0.153** (0.062)	-0.249*** (0.041)
Developmental Psychological Contract	-0.635 *** (0.054)	-0.249*** (0.039)	-0.240*** (0.052)	-0.635*** (0.038)
Control Variables	Yes	Yes	Yes	Yes
Adj-R2	0.5214	0.4048	0.5506	0.4279

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

burnout for male civil servants compared to female civil servants. Relationship psychological contract has a positive correlation at the 10% level for female civil servants and a negative correlation at the 1% level for male civil servants, indicating that burnout among male civil servants can be reduced with good organisational relationships. Developmental psychological contract has a negative effect on burnout for female junior civil servants compared to male civil servants, indicating that female civil servants pursue personal development at work.

According to the results in Table 7, there existed significant heterogeneity in the effect of transactional, relational, and developmental psychological contracts on burnout among grassroots civil servants in terms of exercise frequency and whether they lost sleep. In terms of the number of exercise sessions, the higher the psychological contract score, the

lower the burnout among grassroots civil servants who exercise more than three times a week compared to those who exercise less than three times a week. This is because physical exercise develops positive thinking and emotions, which can alleviate burnout among grassroots civil servants. As for whether or not they suffer from insomnia, the higher the psychological contract score of grassroots civil servants who do not suffer from insomnia, the lower the burnout.

Intermediary Analysis Heterogeneity Analysis

To further clarify the relationship between psychological contract and burnout among grassroots civil servants in China, this study takes the physical and mental health of grassroots civil servants as a mediating variable based on the mediating effect procedure proposed by Wen Zhonglin and explores the mechanism of the influence of psychological contract on burnout among grassroots civil servants by constructing a mediating effect model following the below steps (Figure 4).

- (1) Testing the impact of psychological contract on burnout in grassroots civil servants.

$$\text{Burnout}_i = \alpha + \mu_1 \text{Psychological contract}_i + \mu_1 X_i + \delta_i \quad (7)$$

- (2) Examining the impact of psychological contract on the physical and mental health of grassroots civil servants.

$$\text{Burnout}_i = \alpha + \mu_1 \text{Psychological contract}_i + \mu_1 X_i \quad (8)$$

- (3) Inclusion of psychological contract, physical and mental health, and burnout simultaneously in the model.

$$\text{Burnout}_i = \alpha + \mu_1 \text{Psychological contract}_i + \mu_1 \text{Healthy}_i + \mu_1 X_i + \delta_i \quad (9)$$

Where the intervening variable is Healthy_i and X_i is the control variable. If the regression of (Equation 7) is significant, indicating that psychological contract has a significant effect on burnout among grassroots civil servants, the second test is conducted. If the regression of (Equation 8) is significant, indicating that the psychological contract has a significant effect on the mediating variable physical and mental health, proceed to the third step of the test. In the third test, the three variables psychological contract, physical and mental health, and burnout are included simultaneously. If the regression of (Equation 9) is significant, it shows that physical and mental health has a mediating role between psychological contract and burnout in grassroots civil servants. If the mediate variable coefficient is significant and the psychological contract variable coefficient is not significant, it indicates that there is a fully mediated role of physical and mental health between the psychological contract and burnout in grassroots civil servants. The results of the estimated mediating effect of physical and mental health are shown in Table 8.

In accordance with Table 6, transactional and relational psychological contracts had a positive effect on the physical and mental health of grassroots civil servants, while developmental psychological contract had a negative effect on their

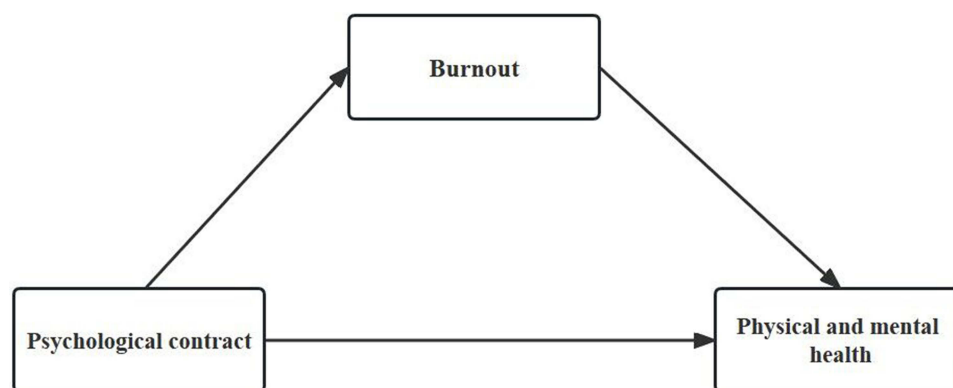


Figure 4 Mediated relationship diagram for this study.

Table 8 Estimated Results of Mediating Effects of Self-Rated Health

Steps	Civil Servant Burnout		
	Step 1	Step 2	Step 3
Dependent Variable	Burnout	Physical and mental health	Burnout
Transactional psychological contract	0.018* (0.031)	0.137*** (0.031)	0.013* (0.031)
Relational psychological contract	−0.206*** (0.036)	0.347*** (0.035)	−0.100*** (0.036)
Developmental Psychological Contract	−0.518** (0.032)	−0.030* 0.031	−0.525*** (−0.031)
Physical and mental health			−0.237*** (0.023)
Control Variables	Yes	Yes	Yes
Adj-R2	0.4805	0.3838	0.5086
Sample Volume	1824	1824	1824

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

physical and mental health. After the inclusion of all three variables in Step 3, the findings were still found to be valid. This suggests that there is a considerable mediating influence of physical and mental health between psychological contract and burnout among grassroots civil servants, such that higher psychological contract scores are associated with higher physical and mental health and lower burnout in grassroots civil servants.

Discussion

Research Findings

The results of the baseline regression showed that psychological contract had a significant negative effect on burnout among grassroots civil servants: transactional psychological contract was positively related to burnout, and relational and developmental psychological contracts were negatively related to burnout. This finding validates the relationship between psychological contract and burnout as has been reported for professionals such as doctors and teachers.^{21,40} Based on the results of the heterogeneity analysis, it is clear that the relationship between psychological contract and burnout among Chinese grassroots civil servants varies significantly based on personal characteristics and lifestyle habits. Transactional psychological contract had a significant positive correlation with burnout among grassroots civil servants aged below 35 and a significant negative correlation among those aged above 35 years. Relational psychological contract had a more significant negative effect on grassroots civil servants aged above 35 years. Developmental psychological contract had a positive correlation for grassroots civil servants above 35 years of age and a negative correlation for those aged below 35. The salary and wages of grassroots civil servants are linked to their length of service. The civil servants who have just joined are highly dissatisfied with their wages and are prone to a certain degree of burnout, which is consistent with Wang Yahua's study.⁴¹ In terms of gender, transactional psychological contract had a higher negative impact on burnout among male grassroots civil servants than among females, relational psychological contract had a positive correlation for female civil servants and a negative correlation for male civil servants, and female civil servants were more prone to burnout compared to male civil servants.⁴² Furthermore, the higher the psychological contract score, the lower the burnout among grassroots civil servants who exercised more than three times a week compared to those who exercised less than three times a week. In addition, the higher the psychological contract score of grassroots civil servants who did not suffer from insomnia, the lower the burnout.^{11,43} The results of the mediation analysis showed that there was a significant mediating effect of physical and mental health on the relationship between psychological contract and burnout among grassroots civil servants, such that the higher the psychological contract score, the higher the physical and mental health of grassroots civil servants and the lower the burnout.^{44–46}

Policy Recommendations

Policy recommendations from this study are as follows: first, there is a need to optimise the grassroots civil service, increase the selection and appointment of female civil servants at the grassroots level under the principle of fair competition, broaden the promotion channels for positions, increase the opportunities for fair promotion and reasonable mobility of civil servants, and create a suitable work platform and working environment for female civil servants. Secondly, we should focus on strengthening the training of new grassroots civil servants. Most of the new civil servants have received a good education, but they lack practice at the grassroots level. They need to improve their political literacy suitable for their posts, and effectively internalise knowledge to efficiently carry out their work. At the same time, the focus should be on strengthening targeted training for civil servants over 35 years of age to overcome the inertia they have developed over a long period working at the grassroots level and to update their knowledge structure to meet the job requirements in the information age. Thirdly, the establishment of a psychological profile and a set of psychological contract files for grassroots civil servants will enable timely monitoring of their psychological situation, as well as an understanding of their personality traits, interests, and hobbies. These data can then be quantitatively analysed through scientific research methods and evaluation systems, and targeted solutions can be proposed to avoid grassroots civil servants' burnout at the source. Fourth, there should be an increased focus on physical exercise and medical check-ups. Government units should take into account the characteristics of their units and organise outdoor physical activities as appropriate, and ensure that grassroots civil servants have annual physical check-ups.

Research Limitations and Outlook

This study also has certain limitations: first, the study did not include grassroots civil servants from all regions of China. Many grassroots civil servants in remote areas are not well paid, have difficult work tasks, and burnout may be more serious. Therefore, follow-up studies should focus on this group of grassroots civil servants. Secondly, there may be other influencing factors and mediating variables affecting the relationship between psychological contract and burnout among grassroots civil servants. Future research needs to further explore other paths and boundary conditions affecting the relationship between psychological contract and burnout among grassroots civil servants, so as to provide a more explanatory theoretical basis for the management practice of grassroots civil servants in the new era. Thirdly, due to the shackles of research cost and time, this study collected cross-sectional data, which cannot reflect the changes in the influence of psychological contract on burnout among grass-roots civil servants. Follow-up studies can adopt a tracking research method to dynamically observe the relationship between psychological contract, physical and mental health, and burnout among grassroots civil servants, so that the research findings can have more causal explanatory power and practical guidance value.

Conclusion

This study uses data from a survey of 1824 grassroots civil servants in China to explore the relationship between psychological contract and burnout among grassroots civil servants in China, validate the heterogeneity that exists across age, gender, rank and lifestyle habits of grassroots civil servants, and explore the mediating utility of physical and mental health. The findings revealed that transactional psychological contract was significantly and positively associated with burnout, while relational and developmental psychological contracts were significantly and negatively associated with burnout among Chinese grassroots civil servants. This indicates that the salaries of grass-roots civil servants have indeed been raised to a certain extent, and the working environment has also been improved. However, grass-roots civil servants are still reluctant to learn and work. In addition, the new era has put forward higher requirements for grass-roots civil servants. Although some basic training is provided by the organisation, grass-roots civil servants still have to make their own efforts in order to put what they have learnt into practice. In the current cumbersome work situation, grass-roots civil servants are tired of coping with the long hours of energy consumption, which will inevitably lead to burnout among grass-roots civil servants. This finding remained valid after using PSM to eliminate sample selection bias. Furthermore, psychological contracts had significant effects on burnout differently depending on the age, gender, exercise frequency, and sleep pattern of grassroots civil servants. Based on the results of the mediation analysis, physical and mental health fully mediated burnout among grassroots civil servants. In further research, other paths and boundary conditions through

which the psychological contract of grassroots civil servants affects burnout can be explored to provide a more explanatory theoretical basis for the management practices of grassroots civil servants in the new era.

Ethical Statement and Informed Consent

This study was approved by the Academic Ethics Committee of Hunan Agricultural University (Approval No.: LEN Audit Section 202 No. 117). We confirm that a written informed consent was obtained from the study participants. The guidelines outlined in the Declaration of Helsinki were also followed.

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Disclosure

The authors report no conflicts of interest in this work.

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