



# The Effect of Challenge-Hindrance Stress on Psychache among Middle and Primary School Teachers

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## Abstract

**Background:** Middle and primary school teachers are experiencing considerable stress from their careers. However, previous studies on work stress among teachers focused on the influence of various types of stress on individuals but failed to explore the relationship among middle and primary school teachers' work stress, psychache. We aimed to examine the basic conditions of the challenge-hindrance stress of middle and primary school teachers as well as its relationship with psychache and psychological resilience.

**Method:** A total of 512 middle and primary school teachers from Zhejiang and Anhui in China were enrolled from May to October 2021. The subjects were evaluated with the challenge-hindrance stress questionnaire, psychache scale, and psychological resilience scale. *t*-test, ANOVA analysis, correlation analysis, and multivariate regression analysis were used to explore the relationship between challenge-hindrance stress and psychache.

**Results:** Middle and primary school teachers generally experience high challenge-hindrance stress and psychache. The challenge-hindrance stress had a significantly positive correlation with psychache ( $r=0.295, 0.439, P<0.01$ ) and a significantly negative correlation with psychological resilience ( $r = -0.320, -0.494, P<0.01$ ). Challenge-hindrance stress could be used to significantly predict the psychache. Specifically, challenge stress and hindrance stress could significantly positively predicted the psychache ( $\beta=0.295$  and  $\beta=0.439$ , respectively). In addition, psychological resilience exerted a partial mediating effect on the relationship between challenge-hindrance stress and psychache.

**Conclusion:** The challenge-hindrance stress of middle and primary school teachers influences their psychache directly as well as indirectly through the mediating effect of psychological resilience.

**Keywords:** Challenge-hindrance stress; Psychache; Psychological resilience

## Introduction

Against the background of the comprehensive basic education reform, society is imposing increasingly high requirements on teachers. Middle and primary school teachers are experiencing

stress from their careers and families. Occupational stress among teachers is the easiest to cause psychache, and serious psychache often leads to suicide and assaultive behaviors. Teacher



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outflow, occupational burnout, and decreased occupational attraction in China was generally perceived as different degrees of occupational stress (1).

In 2016, Tencent Education and the Mycos Research Institute conducted a joint survey on 410,000 Chinese teachers, from preschool to undergraduate programs, on their survival rate. The survey found that 46% of the teachers reported “stress” from their work, and 38% reported “great stress” (2). In the past decade, approximately 5,000 public school teachers in Japan filed for sick leaves yearly from work stress and mental diseases (3). A cross-sectional study on 568 teachers in Egypt found that occupational stress, anxiety, and depression morbidity among the teachers was 100%, 67.5%, and 23.2%, respectively. Stress among teachers has become an international phenomenon. Teachers’ high-stress levels can affect not only the achievements of schools but also the teachers’ physical health and students’ mental and physical wellbeing (4). A study on pre-service teachers from different types of schools in Germany revealed that the idea of inducing pressure is related to relatively low self-efficacy (5). According to a study on 1,001 preschool teachers in Pennsylvania, high work stress is related to increased teacher-student conflicts (6). In addition, relatively high self-care is related to low pressure and the occurrence rate of psychological health symptoms (7).

Without timely attention and intervention to middle and primary school teachers’ stress, it may cause serious influences on the physical and psychological health of teachers, and may even affect the psychological health of students. Therefore, this study focuses on challenge-hindrance stress among middle and primary school teachers and explores its relationship with psychache and psychological resilience.

Historically, most surveys on stress hypothesized that stress is unwelcome and harmful in different fields. Nevertheless, management and health researchers distinguished between different types of stress and disclosed their complex conditions. Specifically, stressors that are manageable and related to objectives (i.e., challenge stressors) can

improve performance and increase power and happiness, whereas stressors that are unmanageable and not related to objectives (i.e., hindrance stressors) can hinder performance and negative behaviors, such as occasional adaptation (8). According to the challenging–hindrance framework, the influence of challenge stressors is weaker than that of hindrance stressors. Challenging stress can stimulate sense of challenge and achievement and exert a positive influence on organizations and individuals, whereas hindrance stress demonstrates the opposite effect. Challenge stress can increase individuals’ job-related happiness, engagement, and learning motivation and improve their creativity and innovative behavior, whereas hindrance stress can significantly exert a negative influence (9).

Psychache is connected with pain and certain threats. Psychache is a type of continuous unpleasant emotional experience, including general spiritual pain, desperation, perceived burden, and low sense of belonging. Perceived stress can lead to psychache; thus, psychache is a predictive mechanism for suicidal ideation. Compared with patients with no history of suicidal behavior, patients with recent or past suicidal intentions demonstrate higher psychache level, strength, and frequency (10). By investigating stress among middle school teachers as well as its relevant influencing factors, previous study found that teachers bearing considerable pressure reported high psychache, and students reported high incidence of depression (11). According to a study on 43,845 women teachers in 12 states in Mexico, high levels of couple, family, and work stress are serious psychache risk factors (12). Therefore, this study proposes a hypothesis: Middle and primary school teachers’ challenge–hindrance stress can be used to positive effect on their psychache.

Psychological resilience is a dynamic process that occurs when life events, such as stress and adversity, and protective factors act simultaneously (13). According to the conservation of resources theory, psychological resilience is a type of positive psychological resource for individuals. When an individual experiences work stress, its negative

influence can be relieved by the individual's available resources (14, 15). Individuals with high psychological resilience are less affected by stress and can dispel its negative influence and have relatively high psychological health levels (16). The study showed that employees with high psychological resilience generally employ positive attribution to events at work. Positive attribution and emotions can help employees cope with work stress, thereby inducing positive emotions (17).

In short, psychological resilience, as a protective factor against stress, can maintain individuals' psychological health and improve their life satisfaction. Whether psychological resilience can affect teachers' psychological life quality through challenge-hindrances stress and exert a positive influence on their psychological life is a problem worth examining comprehensively.

Therefore, this study proposed a hypothesis: Psychological resilience has a mediating effect on the influence of challenge-hindrances stress on psychache among middle and primary school teachers.

## **Materials and Methods**

### ***Measures***

#### ***Challenge-hindrances stress questionnaire***

The questionnaire developed by Cavanaugh et al (18), covering 11 items was used for the challenge-hindrances stress questionnaire. Specifically, six items were related to challenging stress, and five items were related to hindrance stress, which was scored on a five-point Likert scale. The Cronbach's  $\alpha$  values of the challenge-hindrances stress questionnaire were 0.923, 0.885. This result indicated that the questionnaire demonstrated satisfactory reliability and validity.

#### ***Psychache scale***

The single-dimensional psychache scale comprising 13 items was compiled by Holden et al (19). A five-point Likert scale was employed to score the items, and the higher the score, the higher the degree of psychache. Cronbach's  $\alpha$  of the psy-

chache scale was 0.947, thereby indicating satisfactory reliability and validity.

#### ***Brief resilience scale (BRS)***

The BRS was compiled by Smith et al (20) covering six items scored on a five-point Likert scale. The six items comprised three positives and three negative scoring items. The Cronbach's  $\alpha$  of the scale was 0.800, thereby indicating satisfactory reliability and validity.

### ***Data collection***

First, the corresponding research permission was applied to Shaoxing University, which was submitted for academic ethics check by the Department of Psychological, Shaoxing University. After being approved, teachers from middle schools, and primary schools in China (e.g., Zhejiang Province and Anhui Province) were collected from May to October 2021 according to local economic development levels in China through hierarchical cluster random sampling method. During the investigation, teachers volunteered for the study, and online and offline methods were combined for the questionnaire survey and data acquisition. On the basis of the quality check of all questionnaires, invalid respondents with missing contents and three extreme respondents out of the standard deviation were eliminated, and a total of 530 questionnaires were distributed, and 512 valid questionnaires were collected, demonstrating an effective collection rate of 96.6%.

This study was approved by the Ethics Committee of Shaoxing University (No.43212513/2020-42 and dated 30.12.2020), and all the respondents signed an informed consent form.

### ***Statistical analysis***

Moreover, SPSS 21.0 (IBM Corp., Armonk, NY, USA) was used to analyze and process the collected data. The respondents' assessment results for the challenge-hindrances stress questionnaire, psychache scale, and psychological resilience scale were analyzed. Furthermore, the current situations and differences in challenge-hindrances stress of the middle and primary school teachers

as well as the relationship between challenge–hindrance stress and psychache and psychological resilience were examined via a *t*-test, repeated variance analysis, one-way analysis of variance (ANOVA), correlation analysis, and multivariate regression analysis.

## Results

### Common method variance

All the variables were included in the exploratory factor analysis using the Harman single-factor test. The results demonstrated that five factors with a characteristic root higher than 1 was gained before the rotation. The explained variability of the first factor was 38.32%. Hence, the

study data demonstrated no serious common method bias.

### Demographics differences

Among the respondents, 213 (41.6%) were male and 299 (58.4%) were female and 327 (63.9%) were middle school teachers and 185 (36.1%) were primary school teachers. In addition, 58 (11.3%) respondents had a college degree, 390 (76.2%) had a bachelor's degree, and 64 (12.5%) had a master's degree.

The general status and differences between the respondents were measured using the scores in the challenge–hindrance stress questionnaire (Table 1). An independent sample *t*-test was conducted for the two-variable analysis, whereas single-factor (F) variance analysis was performed when more than two variables were used.

**Table 1:** Differences in challenge-hindrane stress questionnaire scores by demographics

<i>Variable</i>	<i>Challenge stress (t/F)</i>	<i>Hindrane stress (t/F)</i>
Total score	21.68 (4.64)	16.33 (4.29)
Gender	– 1.478	–1.585
Male	21.32 (5.20)	13.31 (4.67)
Female	21.93 (4.18)	13.92 (3.98)
Marital status	–0.446	–0.132
Married	21.63 (4.80)	13.66 (4.40)
Single	21.85 (4.01)	13.72 (3.86)
Teacher type	2.472*	–1.124
Primary school teacher	22.27 (4.64)	13.41 (4.25)
Middle school teacher	21.05 (4.80)	13.93 (4.49)
Teaching years	2.774*	1.362
1–5 years	22.02 (4.14)	13.69 (3.92)
6–10 years	22.03 (4.27)	13.65 (3.82)
11–15 years	22.44 (4.67)	12.90 (4.34)
16–20 years	21.89 (5.03)	13.56 (4.56)
>21 years	20.69 (4.88)	14.19 (4.59)

\* $P < 0.05$

First, the existence of significant differences between challenge stress and hindrance stress was investigated using repeated variance analysis, and the results showed significant differences between the two types of stress ( $F=366.34$ ,  $P < 0.001$ ). According to the calculation, the mean score of a single challenge stress item was 3.61, the theoretical median was 3.67. By contrast, the

mean score of a single hindrance stress item was 3.27, the theoretical median was 3.20. Second, according to the independent sample *t*-test (Table 1), the female teachers had higher challenge stress levels than the male teachers; however, the difference was not significant ( $P > 0.05$ ). Concerning marital status, the married teachers had higher challenge stress levels than the single teachers,

but the difference was not significant ( $P>0.05$ ). In addition, the primary school teachers had significantly higher challenge stress levels than the middle school teachers ( $P<0.05$ ). For hindrance stress, the middle school teachers had higher hindrance stress levels than the primary school teachers, but the difference was not significant ( $P>0.05$ ). According to the ANOVA (Table 1), challenge stress varied significantly with teaching years ( $P<0.05$ ). The teachers who had been teaching for less than 5 years and 11–15 years exhibited significantly higher challenge stress levels than the teachers who had been teaching for more than 21 years.

**Correlation analysis**

Table 2 revealed pairwise correlations between challenge–hindrance stress and psychache and

psychological resilience. The results showed that challenge stress and hindrance stress among middle and primary school teachers were significantly correlated ( $P<0.01$ ), with a correlation coefficient of 0.698. In addition, the challenge stress and hindrance stress of the middle and primary school teachers were significantly positively correlated with their psychache ( $P<0.01$ ), with correlation coefficients of 0.295 and 0.435, respectively. Moreover, the challenge stress and hindrance stress of the middle and primary school teachers were significantly negatively correlated with their psychological resilience ( $P<0.01$ ), with correlation coefficients of  $-0.320$  and  $-0.494$ , respectively. Psychache was also significantly negatively related to psychological resilience ( $P<0.01$ ), with a correlation coefficient of  $-0.524$ .

**Table 2:** Correlation matrices of challenge–hindrance stress, psychache, and psychological resilience

<i>Variables</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1 Challenge stress	1			
2 Hindrance stress	0.698**	1		
3 Psychache	0.295**	0.439**	1	
4 Psychological resilience	$-0.320^{**}$	$-0.494^{**}$	$-0.524^{**}$	1

\* $P<0.05$  and \*\* $P<0.01$

**Mediating effect of psychological resilience on the relationship between challenge–hindrance stress and psychache**

To test the mediating effect of psychological resilience between challenge–hindrance stress and psychache, the research applies the percentile Bootstrap method for deviation correction. In this study, significant correlations between the challenge stress, hindrance stress, psychache, and psychological resilience of the middle and primary school teachers were observed in the correlation analysis ( $P<0.01$ ); thus, testing the mediating effect of psychological resilience was possible. The mediating effect of psychological resilience on the relationship between the challenge–hindrance stress and psychache of the middle and primary school teachers was determined via a regression analysis to disclose the relationships between the variables. A multivariate regression

analysis was conducted using the multivariate regression method, with challenge stress and hindrance stress as the independent variables, psychological resilience as the mediating variable, and psychache as the dependent variable. The mediating effect of psychological resilience on the relationship between challenge–hindrance stress and psychache is shown in Table 3.

Multilayer regression analysis was conducted, and challenge stress and hindrance stress were entered into the regression equation to examine the mediating effect of psychological resilience on the relationship between the challenge–hindrance stress and psychache of the middle and primary school teachers, and the results are presented in Table 3. The challenge–hindrance stress and psychache of the middle and primary school teachers had a significantly positive predictive effect on their psychache ( $\beta=0.295$ ,  $P<0.001$ ;  $\beta=0.439$ ,



$P < 0.001$ ), and their challenge–hindrance stress had a significantly negative predictive effect on their psychological resilience ( $\beta = -0.320$ ,  $P < 0.001$ ;  $\beta = -0.494$ ,  $P < 0.001$ ). After psychologi-

cal resilience was added, challenge stress ( $\beta = 0.142$ ,  $P < 0.001$ ) and psychological resilience ( $\beta = -0.479$ ,  $P < 0.001$ ) had significant predictive effects on psychache.

**Table 3:** Mediating effect of psychological resilience between challenge–hindrance stress and psychache

Variable	Psychological resilience			Psychache		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Challenge stress	-0.320***		0.295***		0.142***	
Hindrance stress		-0.494***		0.439***		0.238***
Psychological resilience					-0.479***	-0.406***
R <sup>2</sup>	0.102	0.244	0.087	0.193	0.293	0.318
Adjusted R <sup>2</sup>	0.100	0.243	0.085	0.191	0.290	0.315
F value	58.055***	165.013***	48.635***	121.969***	105.422***	118.529***

\* $P < 0.05$ , \*\* $P < 0.01$ , and \*\*\* $P < 0.001$

Using the Bootstrap method to further test the mediating effect, the results show the indirect effect of psychological resilience on the impact of challenge stress, hindrance stress, and psychache, the Boot standard error of indirect effects were 0.082, 0.087. Bootstrap 95% confidence interval [-1.08, -0.76], [-0.95, -0.61] were not included 0, which means the mediating effects of psychological resilience in the relationship between challenging stress, hindrance stress, and psychache

were significant in Table 4. Based on the regression coefficient of challenge stress ( $\beta = 0.142$ ,  $P < 0.001$ ), and hindrance stress ( $\beta = 0.238$ ,  $P < 0.001$ ), psychological resilience exerted partial mediating effects on the relationship between challenge stress, hindrance stress, and psychache in Table 4. The mediating effects/ total effects of psychological resilience were 51.96% and 45.69%.

**Table 4:** Mediating effect of Bootstrap test and effect size

path	Mediating effect	95% CL	
		Lower limit	Upper limit
Challenge stress – Psychological resilience – Psy- chache	0.15	-1.08	-0.76
Hindrance stress – Psychological resilience – Psy- chache	0.20	-0.95	-0.61

## Discussions

Middle and primary school teachers’ mental health is an essential factor affecting the quality of education. It can be seen from Table 1 that middle and primary school teachers generally have relatively high challenge–hindrance stress levels, which is consistent with the results of existing studies (21). This finding may be closely

related to the occupation of middle and primary school teachers. On the one hand, middle and primary school teachers work with children and teenagers. Middle and primary school teachers are required to handle not only their students’ education and challenges in admission to higher-level schools but also their tedious daily tasks. On the other hand, middle and primary school teachers are required to address various complex and changing working situations as well as a series of

complicated interpersonal relationships. As a result, middle and primary school teachers generally have relatively high challenge–hindrance stress levels. According to the research results, middle and primary school teachers have significantly higher hindrance stress than challenge stress levels. This result could be explained as follows. From the perspective of society, the family, and the school, parents expect high academic performance from their children owing to increasing pressure from social competition, and schools experience pressure from rates of admission to higher-level schools. Hence, parents' expectations and schools' benefits should be considered when implementing education policies, which can increase uncertain stress among middle and primary school teachers.

Middle and primary school teachers' psychache may suffer from occupational stress, such as frequently changing regulatory frameworks and too many non-teaching tasks. According to the analysis results in Table 2, the psychache of the middle and primary school teachers has a significantly positive correlation with their challenge and hindrance stress. This result is consistent with that of previous studies on pressure and teachers' psychological health and verifies the conservation of resources theory (22, 23). Such high resource consumption reduces individuals' positive subjective feelings and cognitive evaluations. Hindrance stress undoubtedly has a negative influence on individuals' working state and physical and psychological health (24). Although previous studies proved that challenge stress is positively significant to individual development, this study reveals that middle and primary school teachers have relatively high challenge stress levels, which can be used to predict their psychache. Therefore, the influence of challenge stress on other variables may be crucial. If such influence exceeds the threshold, then the positive effect of challenge stress is weakened, while its negative effect is strengthened, thereby triggering a series of negative chain reactions (25).

Middle and primary school teachers' psychological resilience has a negative predictive effect on their psychache. This finding reveals that teachers

with high psychological resilience may experience less challenge and hindrance stress and have low psychache levels. This finding conforms to that of the previous study (26). Faced with stressors, individuals with high psychological resilience are more able to experience positive emotions and dispel daily stress than those with low psychological resilience. According to further evidence, many of the teachers experience high stress, causing burnout, and suffer from psychache. Individuals' internal and external protective factors are crucial to the development of psychological resilience. Individuals mobilize their protective resources when they encounter adversity to protect themselves from risk factors through their well-adapted internal potential.

Based on the above analysis, the following interventions can be implemented. Middle and primary school teachers generally have relatively high challenge and hindrance stress levels. Specifically, hindrance stress influences psychache more than challenge stress, indicating that it has a stronger predictive effect on psychache. Therefore, middle and primary schools should pay attention to teachers' stress conditions, especially hindrance stress. Middle and primary teachers' high-stress levels will influence schools' achievements, including those related to absenteeism and burnout. Appropriate challenge requirements may train middle and primary teachers' abilities to cope with future stressful events, especially their psychological resilience (27). Moreover, middle and primary teachers' adaptation ability should be strengthened, especially for young teachers, because some studies demonstrated that supportive colleagues, strong and powerful leaders, and a positive school culture are conducive to improving teachers' adaptive capacity and reducing their work stress (28). Finally, assistance must be offered to middle and primary teachers to strengthen their psychological resilience improve their mental regulation capacity and decrease their psychache.

## Conclusion

The middle and primary school teachers generally had high hindrance stress and psychache levels. Specifically, their hindrance stress levels were significantly higher than their challenge stress levels. Moreover, challenge and hindrance stress positively influenced psychache, and psychological resilience also plays an indirect mediating role in the influence relationship.

## Ethical considerations

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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## Conflict of Interest

The authors declare that there is no conflict of interests.

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