

# Perceived Stress and Mental Health Literacy Among Chinese Preschool Teachers: A Moderated Mediation Model of Anxiety and Career Resilience

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**Purpose:** Chinese public mental health is currently characterized by a high prevalence of mental ill health and a low consultation rate, due primarily to the nation's low mental health literacy. Previous studies have shown that occupational stress may be a risk factor for mental health literacy. In China, preschool teachers are under high pressure; however, few studies have examined the mechanisms that mediate and moderate the relationship between preschool teachers' feelings of stress and their mental health literacy.

**Methods:** A questionnaire was administered to 2352 preschool teachers to explore the relationship between their stress perceptions and mental health literacy.

**Results:** Preschool teachers' perceived stress was significantly and negatively associated with their mental health literacy, with anxiety playing a partially mediating role. Preschool teachers' career resilience moderated the relationship between perceived stress and anxiety. Perceived stress positively predicted anxiety for teachers with low levels of career resilience; for teachers with high levels of career resilience, perceived stress still positively predicted anxiety, and the higher the level of career resilience, the weaker the positive prediction of stress perception on anxiety.

**Conclusion:** Perceived stress directly predicted mental health literacy among preschool teachers, and also indirectly predicted mental health literacy through the mediating role of anxiety. Career resilience moderated the relationship between stress perception and anxiety. These findings provide new perspectives on the treatment and prevention of preschool teachers' mental ill health.

**Keywords:** mental health literacy, perceived stress, anxiety, career resilience, preschool teacher

## Introduction

Mental ill health in present-day China has a high prevalence.<sup>1,2</sup> A study has shown that the weighted lifetime prevalence of all types of mental illnesses (except dementia) in China's population over the age of 18 is 16.57%.<sup>1</sup> An important reason for this phenomenon is the low mental health literacy (MHL) of the population. MHL refers to the knowledge, attitudes, and behaviors that individuals develop to promote their own and others' mental health<sup>3-5</sup> and to cope with their own and others' mental illnesses.<sup>4-6</sup> The current MHL of the public is characterized by inadequate recognition of mental illness,<sup>1</sup> severe stigmatizing attitudes,<sup>7</sup> and a reluctance to seek help.<sup>8</sup> Our stigmatization of people with mental illness is also common in modern society.<sup>9</sup> A survey of 9851 Chinese citizens over the age of 18 found that overall MHL is at a low to moderate level.<sup>10</sup>



Previous studies have found that MHL can improve mental health.<sup>11,12</sup> A high level of MHL is conducive to early identification of mental disorders, reducing stigma, and obtaining timely and effective support and treatment, so as to improve the mental health of individuals and the public.<sup>3,4,13</sup> However, the level of individuals' MHL is associated with age, gender, race, personal experience, social and cultural environment, and types of mental disorders.<sup>14</sup> For example, there is high awareness of depression and schizophrenia,<sup>15</sup> compared to low awareness of anxiety and personality disorders.<sup>16–18</sup> Therefore, this study focuses on the relationships among perceived stress, career resilience, anxiety, and MHL.

To date, research on MHL has focused on community residents and students, while other populations have rarely been included.<sup>19</sup> The study of teachers' MHL is particularly important.<sup>20</sup> Previous research indicated that the level of MHL in the teacher population remained low.<sup>21,22</sup> Thus, it is crucial to conduct research on the MHL of the Chinese preschool teachers given the lack of relevant studies.

Perceived stress refers to the psychological confusion, threat, or challenge posed by various stimulating events and adverse factors in life, where individuals experience a state of tension and loss of control.<sup>23</sup> In recent years, there has been a frequent occurrence of child abuse. Chinese society has increased its focus on early childhood education, and has fully recognized the foundational role of high-quality early education for children. As a result, more stringent professionalization requirements have been placed on preschool teachers, and the preschool teacher community has been given more responsibilities. At the same time, there are high social expectations for preschool teachers, corresponding to the fact that their social status is generally not as high as that of teachers at other educational levels, and salaries are generally lower.<sup>24</sup> These factors have resulted in preschool teachers experiencing high levels of stress, and have also had a considerable impact on the psychological health of preschool teachers, resulting in them experiencing a state of group psychological crisis.<sup>25</sup>

According to the general stress theory,<sup>26</sup> tension or stress can lead to problem behaviors, which are unpleasant experiences. An individual's degree of mental health and MHL can both be impacted to some extent by stressful circumstances.<sup>27</sup> Stress-induced negative impacts may be a risk factor for MHL among those who have obtained less relevant psychological training. Studies have also found that people with high stress underestimation have lower MHL; thus, high stress underestimation is linked to a greater tendency of not recognizing depression.<sup>28</sup>

An individual's MHL can be impacted by perceived stress both directly and indirectly through mediating factors such as anxiety. Anxiety involves experiencing tension and worry about uncertainty and various life changes.<sup>29</sup> Teachers are a high prevalence group for psychological problems such as anxiety,<sup>30</sup> and perceived stress plays a role as a "booster" in the development of the psychological problem of anxiety, which has been found to have a positive predictive effect on state anxiety.<sup>31,32</sup>

MHL is an important predictor of mental health problems such as anxiety,<sup>12</sup> but anxiety also affects MHL,<sup>33,34</sup> because individuals experiencing anxiety do not necessarily identify their own mental state. The identification of anxiety is one of the components of MHL. Anxiety is less easy to identify than depression and the symptoms of schizophrenia.<sup>18,35</sup> A study of college students found that mental health knowledge was significantly negatively correlated with anxiety.<sup>36</sup> After the intervention, anxiety was found to promote the MHL of adolescents, such as anxiety identification, anxiety prevention strategies, and anxiety self-help strategies.<sup>37</sup>

According to the self-system process model,<sup>38</sup> anxiety is a component of the individual self-system. Since external surroundings may influence an individual's outcomes (MHL, etc.) through their self-system (eg, anxiety), we hypothesize that anxiety mediates the effect of perceived stress on MHL. Thus, we expected that

Hypothesis 1: Anxiety would play a mediating role between perceived stress and MHL.

The interaction theory of stress<sup>39</sup> proposes that cognitive assessments determine the way we adopt coping mechanisms in stressful situations. Thus, people react differently to the same event and have different outcomes. However, individual difference variables play a crucial role in situational understanding.<sup>40,41</sup> Therefore, the indirect and direct relations between perceived stress and MHL, mediated by anxiety, will vary from person to person. Studies have found that career resilience plays a moderating role between perceived stress and sleep quality, stress and burnout, and stress and psychological health.<sup>42,43</sup> Career resilience is focusing on the

interactions between protective factors in teachers and their environment and their self-regulatory processes that lead to rapid recovery and positive growth when experiencing significant occupational stress or adversity.<sup>44,45</sup>

Research has shown that individuals with better career resilience tend to be more positive, focusing on the positive aspects of their surroundings, perceive their surroundings as complex and difficult, and see opportunity and hope even in the face of peril. Focusing mainly on negative aspects prevents people from seeing the value and potential in their surroundings, which can lead to a vicious cycle of anxiety.<sup>46</sup> Resilience has negative associations with perceived stress and anxiety.<sup>47</sup> Perceived stress increases anxiety, and resilience has been found to lower levels of general perceived stress and anxiety symptomatology.<sup>48</sup> The self-regulatory model of career resilience suggests that when occupational events cause sufficient feelings of stress, the disruption of the mind–body balance or the entry into anxiety depends on the individual’s assessment of these changes, and how they manage their own resilience assets and environmental resilience resources through self-regulatory control.<sup>44</sup> Therefore, career resilience regulates the relationship between perceived stress and anxiety. Thus, we hypothesized

Hypothesis 2: Career resilience would play a moderating role in perceived stress and anxiety.

This study analyzed whether anxiety mediated between perceived stress and MHL, and further explored the moderating role of career resilience between perceived stress and anxiety (see Figure 1).

## Methods

### Participants and Procedure

Between April 2020 and January 2021, cluster sampling was used to investigate preschool teachers enrolled in Beijing, Hebei, Guizhou, and Shaanxi provinces in China. A questionnaire was sent to the participants via WeChat, and they completed the survey online. A total of 2600 questionnaires were collected, and 2352 valid questionnaires were obtained after excluding invalid questionnaires. There were 67 men and 2285 women, with education levels of secondary school (384,16.3%), college (1027, 43.7%), and bachelor’s degrees (941,40%), respectively, with teaching experience ranging from newly qualified teachers to those with 50 years of teaching experience. The study was approved by the scientific research ethics committee of the first author’s university. All participants were requested to check the online box marked “informed consent”, which introduced their right to withdraw, anonymity, and confidentiality prior to taking the survey. If a respondent refuse to check the box, the survey will be ended.

### Measures

#### Mental Health Literacy

The National MHL Questionnaire<sup>5</sup> was used to assess the MHL of preschool teachers. The questionnaire consists of 60 questions with six dimensions. Two knowledge and perception dimensions were judgment questions (1 point for a correct answer, 0 point for an incorrect answer or “don’t know”), and four attitudes and habits dimensions were scored on Likert

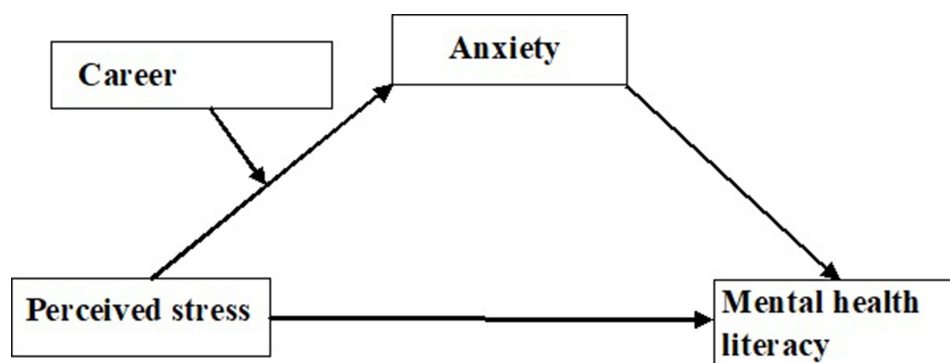


Figure 1 The moderated mediation model.

5-point scales. The higher the total score, the higher the level of MHL. In this study, the confirmatory factor analysis (CFA) indicators of National MHL Questionnaire were better:  $\chi^2/df=7.830$ , RMSEA=0.054, RMR=0.001, AGFI=0.978, GFI=0.991, CFI=0.998. The Cronbach's  $\alpha$  for this measure was 0.890.

### Perceived Stress

The Perceived Stress Scale revised by Yang and Huang,<sup>49</sup> was used to assess the level of perceived subjective stress in the face of unpredictable, uncontrollable, or overloaded life events. A 5-point scale was used, with scores ranging from 1 "never" to 5 "always", with higher scores indicating greater psychological stress. In this study, the CFA indicators of perceived stress scale were better:  $\chi^2/df=6.213$ , RMSEA=0.047, RMR=0.030, AGFI=0.962, GFI=0.985, CFI=0.987. The Cronbach's  $\alpha$  for this measure was 0.800.

### Anxiety

The Self-Rating Anxiety Scale (SAS) was used to measure subjective perceptions of the severity of anxiety states.<sup>50</sup> The scale consists of 20 questions on a 4-point scale, ranging from 1 "never", 2 "occasionally", 3 "sometimes", and 4 "often". The scores were based on the subject's actual situation in the last week, with higher scores indicating greater anxiety. In this study, the CFA indicators of self-rating anxiety scale were better:  $\chi^2/df=4.409$ , RMSEA=0.038, RMR=0.021, AGFI=0.961, GFI=0.975, CFI=0.980. The Cronbach's  $\alpha$  for this measure was 0.860.

### Career Resilience

The Career Resilience Scale revised by Zhang,<sup>45</sup> was used to assess teachers' psychological resilience with 32 questions. A 5-point scale was used, ranging from 1 "strongly disagree" to 5 "strongly agree". The higher the score, the better the teacher's career resilience. In this study, the CFA indicators of career resilience scale were better:  $\chi^2/df=5.490$ , RMSEA=0.044, RMR=0.013, AGFI=0.979, GFI=0.994, CFI=0.992. The Cronbach's  $\alpha$  for this measure was 0.870.

## Data Analysis

Data were processed using SPSS 22.0. First, we computed descriptive statistics and conducted Pearson correlations to examine the relationships among perceived stress, anxiety, career resilience and MHL. Second, the SPSS macro program PROCESS Model 7 by Hayes<sup>51</sup> was used to examine whether anxiety mediate between perceived stress and MHL, and career resilience moderate between perceived stress and anxiety. All regression coefficients were tested using the Bootstrap method of bias correction percentile. All variables were standardized prior to formal data processing.

## Results

### Correlation Analysis

Descriptive statistics were produced and Pearson correlation analysis was conducted on perceived stress, career resilience, anxiety, and MHL. The results are shown in Table 1. The correlation analysis showed that perceived stress was significantly correlated with MHL, career resilience, and anxiety; MHL was significantly correlated with anxiety and career resilience; and anxiety was significantly and negatively correlated with career resilience.

### Moderated Mediation Effect Analysis

SPSS macro prepared by Hayes<sup>51</sup> was used to test the moderated mediation model. The moderated mediation model was constructed with perceived stress as the independent variable, MHL as the dependent variable, anxiety as the mediating variable, and career resilience as the moderating variable, controlling for gender, teaching age, and education level; the results were shown in Table 2. Examining whether career resilience moderated the first half of the mediating role of anxiety between perceived stress and MHL, the results showed that after adding the mediating variable anxiety, perceived stress was a significant predictor of anxiety and MHL ( $\beta = 0.34$ ,  $p < 0.001$ ;  $\beta = -0.42$ ,  $p < 0.001$ ) and anxiety was a significant predictor of MHL ( $\beta = -0.13$ ,  $p < 0.001$ ); the product of perceived stress and career resilience was a significant predictor of anxiety ( $\beta = -0.04$ ,  $p < 0.05$ ).

Table 3 showed the mediated effect values of anxiety between perceived stress and MHL and their 95% Bootstrap confidence intervals at three levels of career resilience scores: mean minus one standard deviation, mean, and mean plus

**Table 1** Descriptive Statistics and Correlations Among Variables

	M	SD	1	2	3	4
1. perceived stress	2.55	0.52	1			
2. mental health literacy	0.57	0.18	-0.49**	1		
3. anxiety	35.10	8.87	0.52**	-0.34**	1	
4. career resilience	3.64	0.40	-0.58**	0.45**	-0.53**	1

Notes: \*\*p < 0.01.

**Table 2** Testing the Moderated Mediation Effect of Perceived Stress on Mental Health Literacy

Outcome Variable	Predictors	R <sup>2</sup>	F	β	t
Anxiety	Gender	0.36	217.26***	0.06	0.59
	Teaching experience			0.01	2.56*
	Education level			0.09	3.87**
	Perceived stress			0.34	16.14***
	Career resilience			-0.33	-16.28***
	Perceived stress × career resilience			-0.04	-2.61**
MHL	Gender	0.25	157.43***	0.10	0.91
	Teaching experience			-0.01	-0.73
	Education level			0.09	3.50**
	Perceived stress			-0.42	-20.00***
	Anxiety			-0.13	-6.26***

Notes: \*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05.

**Table 3** Mediating Effects of Anxiety and Moderating Effects of Career Resilience

	Career Resilience	Effect value	Boot SE	Boot CI Lower	Boot CI Upper
Mediating effects of anxiety	-1.000	-0.050	0.009	-0.069	-0.032
	0.000	-0.045	0.007	-0.061	-0.029
	1.000	-0.039	0.007	-0.054	-0.026

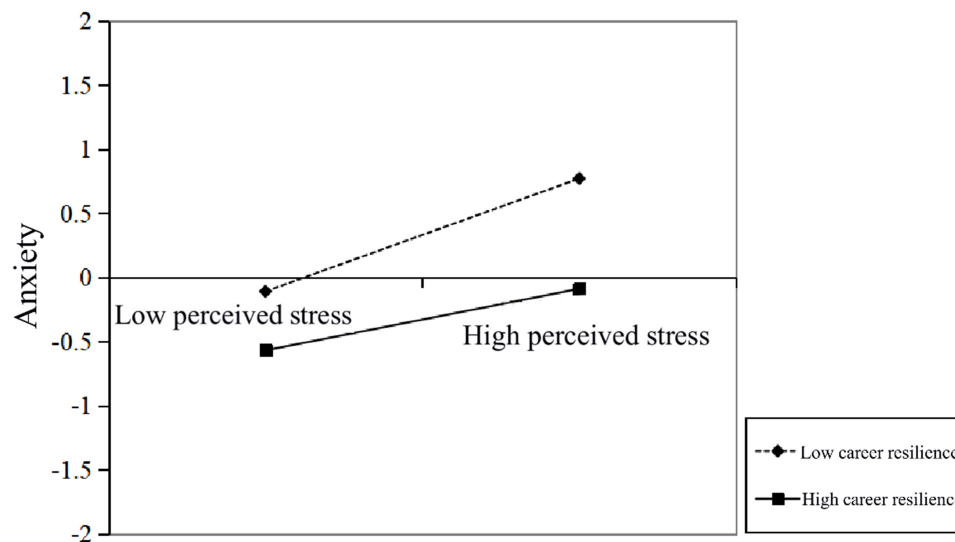
one standard deviation. These confidence intervals did not contain 0, further indicating that the mediating effect of perceived stress regulated by career resilience was significant.

A further simple slope analysis, as shown in Figure 2, showed that perceived stress significantly and positively predicted anxiety at higher levels of career resilience, with a simple slope B of 0.25 (t = 4.82, p < 0.001); at lower levels of career resilience, perceived stress still significantly and positively predicted anxiety, with a simple slope B of 0.42 (t = 8.41, p < 0.001). This suggests that the higher the level of career resilience, the weaker the positive predictive effect of perceived stress on anxiety levels.

## Discussion

### The Mediating Role of Anxiety

Previous studies have found that the heavy workload stress of preschool teachers impacts their mental health and MHL.<sup>25,27,52-54</sup> However, these studies have not focused much on the direct effects of stress on preschool teachers' MHL and even less on the indirect relationships, such as mediating and moderating mechanisms. Consistent with previous research, the present study found that perceived stress may directly affect preschool teachers' MHL, and that the more



**Figure 2** Simple slope analysis shows that career resilience moderated the relation between perceived stress and anxiety.

preschool teachers perceive heavy workload stress, the poorer their MHL.<sup>27</sup> The results of this study also support the general stress theory and the negative experiences caused by stress.<sup>26</sup>

The present study also found that perceived stress not only directly affected preschool teachers' MHL, but also indirectly through the mediating role of anxiety. The higher the perceived job stress of preschool teachers, the higher the psychological expression of anxiety symptoms,<sup>30–32</sup> and anxiety states are risk factors for MHL.<sup>18,35</sup> Thus, perceived stress increases anxiety and thus decreases MHL. This result supports the self-system process model<sup>38</sup> whereby stress in the external environment may influence individual outcomes (MHL, etc.) through individuals' self-system (eg, anxiety).

There is a popular saying in China that “a long illness makes a doctor”.<sup>55</sup> In order to alleviate their anxiety, in daily life individuals who often experience anxiety will pay more attention to anxiety-related knowledge and mitigation strategies, meaning that their MHL will be higher. However, our research found that “a long illness cannot be cured”. Maybe this is because Chinese people are more reserved. When they are under great work pressure and have anxiety, they feel ashamed about seeking help and sharing their problem with others. It may also be that the Chinese people's overall health awareness is poor, and they will not pay attention to anxiety when it is not too serious. At the same time, they are unwilling to take the initiative to seek professional help because of the stigma associated with psychological disorders.

MHL and mental health may interact with each other. There are many mental health problems, but the level of MHL is low; and the lower an individual's level of MHL, the more psychological problems they will have. Therefore, in future research, we need to further verify the relationship between MHL and mental health through longitudinal research and explore other factors that play a role between them.

## The Moderating Role of Career Resilience

The findings of this study imply that the association between perceived stress and anxiety is moderated by preschool teachers' career resilience which is consistent with previous researches, the results suggest that career resilience is a protective factor for anxiety.<sup>48,56</sup>

The reasons for this finding may be as follows: teachers are a group with a high prevalence of anxiety,<sup>30</sup> and perceived stress plays a role as a “booster” in the development of anxiety;<sup>31,32</sup> however, career resilience plays a role as a buffer. When faced with stress at work, preschool teachers with high career resilience will use their own protective mechanisms, as well as the positive aspects of the environment, to help them recover, grow, and experience some anxiety; in contrast, preschool teachers with low career resilience will concentrate more on the negative aspects of the situation and complain more about their busy schedules. Whether preschool teachers have high or low career resilience,

they are either “untreated” or experiencing anxiety without even realizing it. This prevents them from accessing adequate mental health assistance and leads to low MHL.

## Limitations and Implications

There are some limitations to this study which need further investigation in future research. First, the cross-sectional study design means that causal relationships between variables could not be deduced from the results. Future research could use a longitudinal design or experiment to explore the causal relationship between perceived stress and MHL. Second, the present study focused only on individual variables influencing the relationship between perceived stress and MHL, and did not examine interpersonal or environmental variables. Therefore, interpersonal, family environment, and social development variables should be included in future studies to enrich our understanding of the relationship between perceived stress and MHL. Third, this study primarily focused on Chinese preschool teachers and did not compare them with others which may limit the generalizability of our findings to other contexts or populations. In the future, more other people should be participated.

However, the findings of this investigation undoubtedly have important theoretical and practical implications. First, previous research overlooked preschool teachers’ MHL in favor of focusing on mental health. This study’s findings indicate that preschool teachers have poor MHL as a result of high workload stress. Second, the mediated model with moderation not only provided an answer to the question of how perceived stress affects the MHL of preschool teachers, but also revealed the moderating role of career resilience and the mediating role of anxiety, as well as the circumstances under which each role is significant. This contributes to a deeper and broader knowledge of the connection between perceived stress and MHL. Therefore, in practice, it is necessary to appropriately reduce the workload of preschool teachers, and at the same time train them with relevant cognitive and emotional psychological system knowledge. This will enable preschool teachers to objectively and scientifically evaluate the pressure they feel, and to mobilize personal and social environmental resources to deal with pressure and anxiety, so as to improve their MHL.

## Conclusion

The current study constructed a moderated mediation model with anxiety as a mediating variable and career resilience as a moderating variable. We found that perceived stress directly predicted MHL among preschool teachers, and also indirectly predicted MHL through the mediating role of anxiety. Career resilience moderated the relationship between stress perception and anxiety. These findings provide new perspectives on the treatment and prevention of preschool teachers’ mental ill health.

## Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon request.

## Ethics Statement

The studies involving human participants were reviewed and approved by the Scientific Research Ethics Committee of College of Preschool Education, Capital Normal University. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments. The participants provided their online informed consent to participate in this study.

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## Disclosure

Guoying Qian and Yufeng Wu are co-first authors for this study. The authors declare no conflicts of interest in this work.

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