

Article

# Anxiety and Associated Factors Among Chinese Preschool Teachers

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**Abstract:** In China, preschool teachers significantly influence the development of young children aged 3–6 years. Understanding their mental health and its associated factors is imperative to informing policies, optimizing their mental well-being, and supporting their job performance. This study aimed to investigate the factors contributing to anxiety symptoms among preschool teachers. A sample of 393 Chinese preschool teachers (279 women, 114 men), aged 21–56, completed online questionnaires collecting their sociodemographic and work-related information and assessing anxiety symptoms, interpersonal difficulties, personality traits, perceived stress, resilience, and inner strength. Pearson correlation and multiple linear regression analyses identified significant predictors of anxiety symptoms. The prevalence of anxiety symptoms among the studied cohort was found to be 12.2%. Statistically significant factors that positively correlated with anxiety symptoms included objective work-related stress ( $B = 0.149, p < 0.001$ ), interpersonal difficulties ( $B = 0.921, p < 0.001$ ), perceived stress ( $B = 0.108, p = 0.001$ ), and neuroticism ( $B = 0.071, p = 0.002$ ). These findings highlight the urgent need for measures to reduce work-related stress and anxiety. However, when negative mental health factors were included, the effect of positive psychological factors became nullified. Positive mental health might have a moderating role in a negative mental health outcome such as anxiety. Therefore, further research is required to understand the impact of positive mental health factors more clearly.

**Keywords:** preschool teachers; anxiety; mental health; work-related stress; interpersonal difficulty; perceived stress; neuroticism; resilience; inner strength



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## 1. Introduction

Teaching is regarded as a profession that poses significant physical, social, and emotional challenges [1] and is recognized as a career vulnerable to stress and burnout due to the extensive workload [2]. Research has shown that mental health is a crucial but often underestimated component of teachers' professional and personal lives [3,4]. Teachers frequently experience anxiety [5], making workplace mental health a critical public health issue [6]. Teachers may face more mental health issues than other professions due to the high-stress nature of their jobs [7,8]. Notably, it has been acknowledged that there is a strong correlation between teachers' burnout and their efficacy in classroom management [9]. Thus, teachers' workplace well-being may pose a critical public health concern, potentially affecting both the teachers and the overall educational environment involving their students [10].

In China, preschool education, as per the Ministry of Education, refers to the education of children aged 3–6, often called ‘kindergarten education’. According to preschool education guidelines, preschool teachers support and guide children’s learning activities [11]. They are required to multitask and play several roles, such as supporters, cooperators, and guides [12]. Preschool teachers’ psychological health is crucial for their own well-being and the healthy development of children [13]. Studies have, however, indicated that preschool teachers experience significant occupational stress and have a high prevalence of psychosomatic illnesses [14–16]. Nevertheless, there has been extensive focus on preschool teachers’ work norms, professional ethics, and teaching methods rather than their psychological health and well-being [17].

A Chinese study using the Symptom Checklist-90 and Eysenck Personality Questionnaire found that the mental health of preschool teachers lagged the national average, and mental health problems were related to preschool teachers’ personality characteristics and stress [18].

Stress comes from both internal and external factors for preschool teachers. External factors include managing non-teaching duties, a high workload, low compensation, a low social position, and interpersonal relationships [19]. Internal factors arise from teachers’ high self-expectations and perceived inadequacies [20]. When teachers are under stress, their sensitivity to children’s needs decreases [21,22]. Teachers’ positive spontaneous responses to children’s negative emotions help children develop their ability to reflect on, regulate, and understand emotions [23]. However, teachers experiencing high psychological loads, such as stress and emotional exhaustion, are less able to provide such positive responses [24]. This also reflects the crucial role of preschool teachers in promoting children’s social, emotional, and behavioral functioning.

While the prevalence of anxiety symptoms in Asia ranges from 2.5 to 9.1% [25], recent studies have shown that the anxiety level of teachers is 17% [26]. Wang and Yang found that more than 15% of preschool teachers reported a high level of anxiety [27]. The high cognitive demands, emotional strain, and relatively poor remuneration in early childhood education may make preschool teachers particularly vulnerable to anxiety symptoms [28]. Personal factors, such as interpersonal difficulties, personality traits (neuroticism and extraversion), and perceived stress, can be associated with anxiety symptoms [29–32].

Common mental disorders, such as anxiety disorders, are closely linked to one’s personality, with both neuroticism and extraversion being significantly associated with the severity of physiological symptoms [33].

Moreover, positive attributes like resilience and inner strength may have a role in alleviating anxiety symptoms [34,35]. A Chinese study showed that perceived stress negatively impacts mental health literacy among Chinese preschool teachers, with anxiety partially mediating this relationship and career resilience weakening the impact of stress on anxiety [32]. Teachers’ mental health is essential, as it impacts the mental health of their students and their role in health education [36]. Teachers suffering from mental health problems can negatively impact students’ academic achievements [37]. Teachers’ mental health is very important, so it is necessary to examine positive and negative factors from different angles when studying preschool teachers.

More mental health education for preschool teachers can help relieve their psychological problems, especially for those with the stress of overtime [38]. Professional development interventions, including training, in-class coaching, and parent engagement, may improve teachers’ mental health and reduce anxiety symptoms over time [39].

This study aimed to explore the potential associations between sociodemographic factors, work-related characteristics, personality traits, and mental health variables with anxiety symptoms in Chinese preschool teachers. These findings could help us gain better insight into the associated factors, which may help form targets for interventions, policies, and further research to improve the mental well-being of preschool teachers in China.

## 2. Materials and Methods

### 2.1. Study Design

We conducted a cross-sectional study to explore the prevalence of anxiety symptoms and their associated factors among Chinese preschool teachers. Based on the biopsychosocial model [40], this study investigated anxiety symptoms' biological, psychological, and social determinants. The BPS model provided a comprehensive approach to understanding the status and underlying causes of anxiety symptoms.

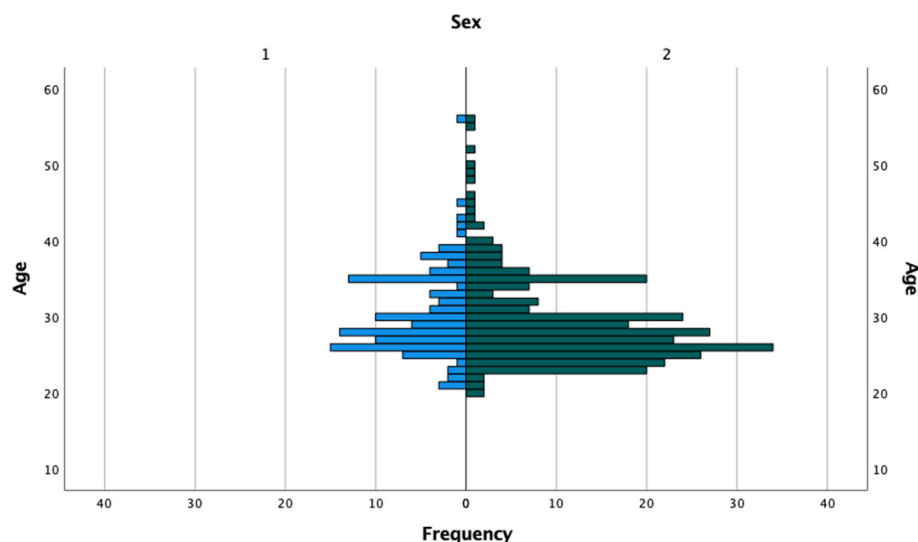
### 2.2. Participants

The participants in this study were preschool teachers in China.

The inclusion criteria of the participants were (1) Chinese preschool teachers that (2) had worked for at least one year; (3) aged 20–60 years at the time of the study; (4) gave consent; (5) worked at least 6 h per day with the children (as the class teacher).

Exclusion criteria were (1) working part-time; (2) simultaneously teaching at a higher level.

Targeting the Chinese preschool teachers, a Chinese questionnaire platform (Questionnaire Star) was used to develop the online questionnaires, and they were distributed using Chinese social media platforms (like WeChat, Weibo, and Xiaohongshu). Since the required sample was not limited to one region in China and based on the difficulty in obtaining the required number of samples, this study employed a snowball sampling technique [41]: the first author, a preschool teacher, invited other teachers in their network to complete the online questionnaires. All participants were encouraged to disseminate the questionnaire to other colleagues. A total of 393 valid preschool teacher samples were collected, including 279 women and 174 men. Figure 1 shows the population pyramid of this study.



**Figure 1.** Population pyramid chart. 1 = male, 2 = female.

### 2.3. Outcomes

The primary outcome or dependent variable was anxiety symptoms. The independent variables included sociodemographic factors (age, sex, level of education, income per month, marital status), work-related factors (class of work city, working years, nature of kindergarten, teacher's title, average daily working hours, average daily sleeping hours, class teacher–student ratio, work-related stress), personality traits (extraversion and neuroticism), and mental health factors (interpersonal difficulties, resilience, perceived stress, inner strength). The objective was to study the prevalence of anxiety symptoms among Chinese preschool teachers and the factors associated with anxiety symptoms.

#### 2.4. Questionnaires and Outcome Measurement Tools

The questionnaire in this study requested basic information on sociodemographic data (age, sex, level of in, income per month, marital status) and preschool teachers' work-related factors (class of work city, working years, nature of kindergarten, teacher's title, average daily working hours, average daily sleeping hours, class teacher-student ratio, work-related stress). Distinguished from perceived stress, work-related stress encompasses specific aspects such as the stress experienced while teaching children, managing workplace demands, communicating with children's families, creating a conducive learning environment, and planning for future career development.

The following measurement tools utilized other mental health factors (anxiety symptoms, interpersonal difficulties, resilience, perceived stress, inner strength) and personality traits (extraversion and neuroticism).

The 21-item Outcome Inventory (OI-21) was developed as a public domain tool available to researchers and healthcare practitioners without charge. It is a self-report questionnaire consisting of 21 items that assess levels of anxiety, depression, somatization, and interpersonal difficulty [42]. Regarding the method of determining the prevalence of anxiety symptoms, we referred to previous research on the development of the OI-21 [42]. The cut-off score was based on our clinical sample's mean OI anxiety score, which was  $13.09 \pm 4.97$ . We finally adopted a cut-off score of 14 to determine significant anxiety symptoms.

The Outcome Inventory was used to measure the anxiety symptoms and interpersonal difficulties of Chinese preschool teachers. This study selected ten items from the OI scale on anxiety and interpersonal difficulties for measurement. In the pilot test of the Chinese version of OI-21, the Cronbach's alpha was 0.93.

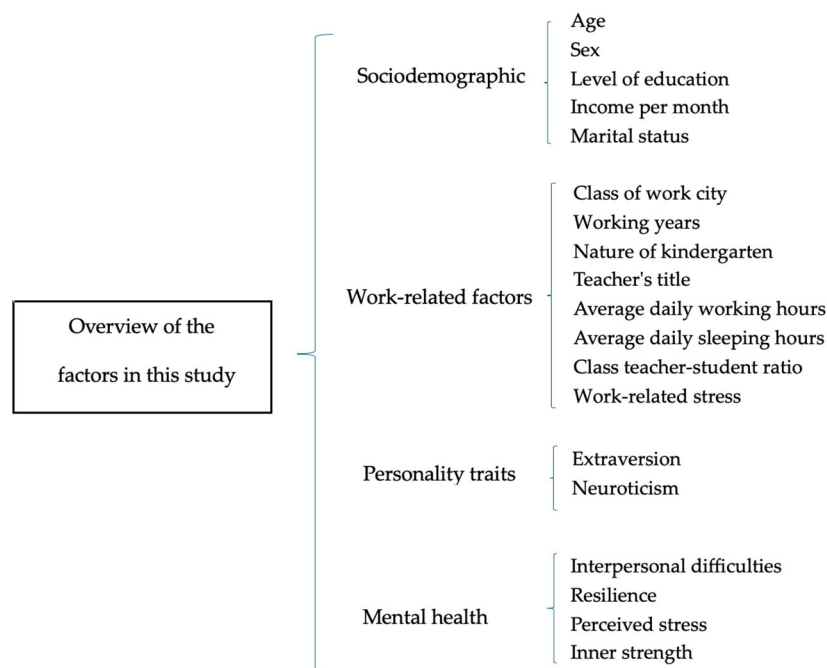
A 9-item Resilience Inventory (RI-9) was used to measure the resilience of Chinese preschool teachers. The RI-9 is a psychological assessment tool that measures an individual resilience, which refers to a person's ability to cope with adversity, adapt to challenges, and bounce back from setbacks. A higher score indicates a higher level of resilience. The RI-9 demonstrated good reliability and validity [43]. The Cronbach's alpha in this study was 0.92.

The 10-item Perceived Stress Scale (PSS-10) was used to measure the perceived stress of Chinese preschool teachers. The PSS-10 is a widely used tool in research and clinical settings to evaluate stress levels and identify individuals who may benefit from stress management interventions. For the Chinese version of the PSS10, the test results revealed an overall Cronbach's alpha coefficient of 0.86 [44]. Higher scores indicate higher levels of perceived stress.

The Inner-Strength-Based Inventory (iSBI) was used to measure the inner strength of Chinese preschool teachers [45]. The iSBI has ten items, and the score ranges from 5 to 50. The higher the score, the higher the level of that respective character. The Cronbach's alpha for the Chinese version of the iSBI showed an excellent reliability coefficient of 0.86 [46].

The Zukerman–Kuhlman–Aluja Personality Questionnaire (ZKA-PQ), Chinese version, was used to measure the extraversion and neuroticism in the personality traits of the Chinese preschool teachers. This study selected 32 items on the scale dealing with these two aspects. The Cronbach's alpha of the internal reliabilities of the five personality scales ranged from 0.61 to 0.81 [47]. Higher scores indicate higher levels of the corresponding traits.

A summary of the overall factors analyzed in this study is shown in Figure 2.



**Figure 2.** The factors studied in this research.

### 2.5. Data Analysis

The data were examined using the statistical software SPSS version 27.

The sample size was estimated based on the prevalence of 53% in a previous study [48], with an alpha 0.05 and a power of 80, and it yielded a sample of 383 [49].

Using descriptive analysis, sociodemographic information (including age, sex, level of education, income per month, marital status), work-related information (including the class of work city, working years, nature of kindergarten, teacher title, average daily working hours and sleeping hours, class teacher–student ratio, work-related stress), frequency and percentage of anxiety, means, and standard deviation of mental health characteristics were reported. Pearson correlations analyzed the correlations between anxiety and other variables. Multiple linear regression is a model that predicts a single dependent variable based on multiple independent variables. Regression analysis determined whether the remaining variables were associated with anxiety and whether each was associated with the other variables. *p*-values of <0.05 were considered significant.

Finally, multiple linear regression analysis was used to test significant variables for each outcome. The  $R^2$  value was calculated to determine the variance explained by the model. Assumptions of linear regression were tested to ensure the validity and reliability of the model. These tests included linearity, assessed using a scatter plot, and independence, evaluated with the Durbin–Watson test. Homoscedasticity was checked using the Breusch–Pagan test; normality of residuals was examined with a Q–Q plot; multicollinearity was assessed using the variance inflation factor (VIF), where VIF values greater than 10 indicate high multicollinearity. The collinearity diagnostic was carried out using both the tolerance test and VIF.

### 2.6. Procedure

The Chiang Mai University Ethics Committee reviewed this study, with number 037/2024. All participants agreed to participate in this study. The link to the online questionnaire and QR code was sent to former colleagues and teachers through the first author to invite them to complete it. In addition, the link to the online questionnaire was posted on social media such as Weibo groups and Xiaohongshu, and the snowball method was used to recruit more participants. The first page of the online questionnaire was the “Participant Information Sheet (PIS)” and the “Informed Consent Form (ICF)”,

as well as the participation criteria. Participants who met all the criteria and voluntarily participated in this study could continue to fill in the questionnaire, and those who did not meet the research criteria were withdrawn from answering. The participant's personal information was not and will not be used for any other purpose. In addition, according to ethical guidelines, all questionnaire data were kept confidential to protect the identity of the participants. All participants who volunteered to participate in this study filled in the questionnaire and voluntarily provided their Alipay accounts. Those who were willing receives a compensation of CNY 4.

### 3. Results

#### 3.1. Sociodemographic and Work-Related Variables

This study included 393 Chinese preschool teachers, most of whom were women. The average age was 29.64 (SD = 5.8). Table 1 shows the sociodemographic and work-related factors, including age group, sex, level of education, income per month, marital status, class of work city, working years, nature of kindergarten, teacher title, average daily working hours, average daily sleeping hours, class teacher–student ratio, and work stress.

**Table 1.** Sociodemographic and work-related factors of Chinese preschool teachers.

Variable	<i>n</i>	Percent
Age		
20–30	270	68.7
31–40	106	27
41–60	17	4.3
Sex		
Male	114	29
Female	279	71
Level of education		
High school and below	6	1.5
Specialist	47	12
Undergraduate	295	75.1
Postgraduate and above	45	11.5
Income per month (CNY)		
<6000	227	57.8
≥6000	166	42.2
Marital status		
No	164	41.7
Yes	229	58.3
Class of work city		
Tier 1	135	34.4
Tier 2	132	33.6
Tier 3 and above	126	32.1
Working years; mean (SD)		
	5.88 (5.16)	
<5 years	186	47.3
≥5 years	207	52.7



Table 1. Cont.

Variable	<i>n</i>	Percent
Nature of kindergarten		
Public	258	65.6
Private	120	30.5
International	15	3.8
Teacher title		
Yes	296	75.3
No	97	24.7
AD working hours; mean (SD)		
8.58 (1.21)		
<8 h	40	10.2
≥8 h	353	89.8
AD sleeping hours; mean (SD)		
7.44 (0.84)		
<8 h	183	46.6
≥8 h	210	53.4
Class teacher–student ratio		
1:5 or less	58	14.8
1:5–1:7	239	60.8
1:7 or more	96	24.4
Work-related stress; mean (SD)		
15.31 (4.15)		
≤6 scores	10	2.6
7 scores–17 scores	254	64.6
≥18 scores	129	32.8

AD = average daily, CNY = Chinese yuan, SD = standard deviation.

Based on graduation and employment, the age range was 10 years, with 20–30 years being young and 31–40 years being middle-aged. However, due to the relatively small number of older people in this study, those aged 41–60 years were grouped. Most preschool teachers collected for this study were in their twenties and thirties, accounting for 68.7% of the total number of teachers. Most teachers were women, accounting for 71%. Most teachers had a bachelor's degree or higher, with only 1.5% having a high school diploma or lower. The participants were more evenly distributed in the division based on a monthly income of CNY 6000. Regarding marital status, there was also a more even distribution of teachers in a spousal relationship (58.3%) and those who were not (41.7%).

First-tier cities are major metropolises that hold significant influence in national politics, economics, and various social activities, and they lead and drive regional development. In China, the four widely recognized first-tier cities are Beijing, Shanghai, Guangzhou, and Shenzhen [50]. Based on the Chinese urban hierarchy system, the distribution of cities where preschool teachers worked in this study was relatively uniform. The distribution of teachers who had worked for less than five years and those who had worked for five years or more was also relatively even. However, regarding the nature of the kindergartens in which they worked, most preschool teachers were in public kindergartens (65.6%). The remaining 30.5% worked in private kindergartens, and only 3.8% of preschool teachers were in international kindergartens. This situation was similar to the percentage of preschool teachers with a teaching title, where public school teachers were more able to apply for a teaching title within the government system, which, in this study, was 75.3% of teachers with a teaching title.

As for the average working hours of teachers, 89.8% of preschool teachers worked more than 8 h per day, but the percentage of preschool teachers who slept more than 8 h was 53.4%. Regarding the teacher–student ratio, most classes (60.8%) had a teacher–student ratio of 1:5–1:7, and only 14.8% had a teacher–student ratio of 1:5 or less. In comparison, 24.4% of classes had a teacher–student ratio of 1:7 or more, which meant that a teacher had to look after more children. Regarding work-related stress, 32.8% of preschool teachers scored 18 or more out of 25.

### 3.2. Anxiety Score and Anxiety Prevalence

The mean and standard deviation of the OI anxiety score among the sample was  $13.09 \pm 4.97$ . Since there was no cut-off for anxiety symptoms or any anxiety disorder based on the DSM-5, we referred to the previous study on the OI-21 [42] to determine a cut-off score of 14. According to this cut-off, the prevalence of anxiety scores indicated that the clinical relevance was 12.2%.

### 3.3. The Relationship Between Anxiety and Sociodemographic Factors and Work-Related Stress

The Pearson’s correlation of anxiety symptoms with age, level of education, income per month, working years, marital status, average daily working hours, average daily sleeping hours, class teacher–student ratio, and work-related stress is shown in Table 2.

**Table 2.** Correlation between sociodemographic and work-related factors and anxiety symptoms.

	Anxiety	1	2	3	4	5	6	7	8	9
1. Age	−0.058	-	-	-	-	-	-	-	-	-
2. Level of education	−0.023	0.065	-	-	-	-	-	-	-	-
3. Income per month	−0.109 *	0.211 ***	0.225 ***	-	-	-	-	-	-	-
4. Working years	−0.042	0.907 **	−0.023	0.199 ***	-	-	-	-	-	-
5. Marital status	−0.110 *	0.573 ***	0.012	0.223 **	0.481 ***	-	-	-	-	-
6. AD working hours	0.104 *	−0.057	−0.007	0.041	−0.023	−0.074	-	-	-	-
7. AD sleeping hours	−0.157 **	0.008	−0.082	0.002	−0.024	0.107 *	−0.158 **	-	-	-
8. Class teacher–student ratio	0.027	0.003	0.041	−0.010	−0.047	0.037	−0.041	−0.024	-	-
9. Work-related stress	0.548 ***	0.023	0.009	0.001	0.033	−0.047	0.097	−0.154 **	0.089	-

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , AD = average daily. 1 = age; 2 = level of education; 3 = income per month; 4 = working years; 5 = marital status; 6 = average daily working hours; 7 = average daily sleeping hours; 8 = class teacher–student ratio; 9 = work-related stress.

The only factors significantly related to anxiety symptoms were income per month, marital status, average daily working hours, daily sleeping hours, and work stress.

Other mental health factors, personality traits (extraversion and neuroticism), and anxiety symptoms were significantly related to interpersonal difficulties, resilience, perceived stress, inner strength, extraversion, and neuroticism (Table 3).

**Table 3.** Correlation between mental health factors, personality traits, and anxiety symptoms.

	Mean ± SD	1	2	3	4	5	6
1. Anxiety	13.09 ± 4.97	-	-	-	-	-	-
2. Interpersonal difficulties	4.47 ± 3.48	0.856 **	-	-	-	-	-
3. Resilience	37.99 ± 7.43	−0.485 **	−0.508 **	-	-	-	-
4. Perceived stress	17.16 ± 5.02	0.639 **	0.592 **	−0.451 **	-	-	-
5. Inner strength	35.98 ± 6.86	−0.399 **	−0.397 **	0.496 **	−0.461 **	-	-
6. Extraversion	49.55 ± 8.37	−0.633 **	−0.681 **	0.593 **	−0.651 **	0.533 **	-
7. Neuroticism	33.50 ± 8.92	0.689 **	0.681 **	−0.501 **	0.693 **	−0.457 **	−0.697 **

1 = anxiety; 2 = interpersonal difficulties; 3 = resilience; 4 = perceived stress; 5 = inner strength; 6 = extraversion; \*\*  $p < 0.01$ .

### 3.4. Multiple Linear Regression Between Mental Health Factors and Anxiety Symptoms

We analyzed the association between anxiety and positive mental health factors and between anxiety and negative mental health factors separately. Positive mental health



factors included resilience and inner strength. Negative mental health factors included interpersonal difficulty and perceived stress. Both models included covariates such as income per month, marital status, average daily working hours, average daily sleeping hours, and work stress. All assumptions for multiple regression were tested and found not to be violated.

The multiple linear regression between positive mental health factors, covariates, and anxiety is shown in Table 4.

**Table 4.** Multiple linear regression between positive mental health factors and anxiety symptoms.

Variables	B	SE	$\beta$	<i>t</i>	<i>p</i> -Value	95% CI		VIF
Income per month	−0.478	0.317	−0.058	−1.510	0.132	−1.101	0.144	1.075
Marital status	0.152	0.388	0.015	0.391	0.696	−0.612	0.915	1.111
AD working hours	−0.08	0.157	−0.002	−0.053	0.958	−0.316	0.299	1.052
AD sleeping hours	−0.081	0.228	−0.014	−0.355	0.723	−0.530	0.368	1.083
Work-related stress	0.544	0.046	0.454	11.770	<0.001	0.453	0.635	1.076
Resilience	−0.213	0.030	−0.318	−7.091	<0.001	−0.271	−0.154	1.448
Inner strength	−0.104	0.032	−0.143	−3.298	0.001	−0.166	−0.042	1.366

AD = average daily; B = unstandardized coefficients; SE = standard error;  $\beta$  = standardized coefficients, *t* = *t*-value; CI = confidence interval; VIF = variance inflation factor.

The positive mental health model was significant,  $F(7, 385) = 48.158, p < 0.001$ , explaining 45.7% of the variance in the outcome variable after adjusting for the covariates ( $R^2 = 0.457$ ). Work stress, resilience, and inner strength were significantly related to anxiety ( $B = 0.544, p < 0.001, B = -0.213, p < 0.001, B = -0.104, p = 0.001$ , respectively) (Table 4).

Along the same line, the negative mental health model was significant,  $F(7, 385) = 179.266, p < 0.001$ , explaining 76.10% of the variance in the outcome variable after adjusting for the covariates ( $R^2 = 0.761$ ). Work-related stress, interpersonal difficulty, and perceived stress were significantly related to anxiety ( $B = 0.152, p < 0.001, B = 1.021, p < 0.001, B = 0.148, p < 0.001$ , respectively) (Table 5).

**Table 5.** Multiple linear regression between negative mental health factors and anxiety symptoms.

Independent Variables	B	SE	$\beta$	<i>t</i>	<i>p</i> -Value	95% CI		VIF
Income per month	−0.037	0.211	−0.004	−0.174	0.862	−0.451	0.377	1.080
Marital status	−0.148	0.254	−0.015	−0.584	0.560	−0.647	0.351	1.078
AD working hours	0.047	0.103	0.012	0.457	0.648	−0.156	0.250	1.040
AD sleeping hours	0.213	0.151	0.036	1.408	0.160	−0.084	0.510	1.080
Work-related stress	0.152	0.035	0.127	4.323	<0.001	0.083	0.211	1.407
Interpersonal difficulty	1.021	0.046	0.715	22.062	<0.001	0.930	1.112	1.725
Perceived stress	0.148	0.029	0.150	5.056	<0.001	0.091	0.206	1.434

AD = average daily; B = unstandardized coefficients; SE = standard error;  $\beta$  = standardized coefficients, *t* = *t*-value; CI = confidence interval; VIF = variance inflation factor.

When both positive and negative mental health factors and personality traits were combined in the same model, the model was significant,  $F(11, 379) = 118.581, p < 0.001$ , explaining 76.80% of the variance in the outcome variable after adjusting for the covariates ( $R^2 = 0.769$ ). Work-related stress, interpersonal difficulty, perceived stress, and neuroticism personality were significantly related to anxiety ( $B = 0.921, p < 0.001, B = 0.108, p < 0.001, B = 0.071, p = 0.002$ , respectively) (Table 6).

**Table 6.** Multiple linear regression between total factors and anxiety symptoms.

Independent Variables	B	SE	$\beta$	<i>t</i>	<i>p</i> -Value	95% CI		VIF
Income per month	0.017	0.208	0.002	0.08	0.937	−0.392	0.426	1.090
Marital status	−0.025	0.255	−0.003	−0.099	0.921	−0.526	0.476	1.124
AD working hours	−0.018	0.103	−0.004	−0.178	0.859	−0.221	0.184	1.068
AD sleeping hours	0.281	0.15	0.048	1.869	0.062	−0.015	0.576	1.101
Work-related stress	0.149	0.035	0.125	4.287	<0.001	0.081	0.218	1.435
Resilience	−0.042	0.022	−0.063	−1.904	0.058	−0.085	0.001	1.836
Inner strength	−0.004	0.022	−0.005	−0.178	0.859	−0.047	0.039	1.568
Extraversion	0.019	0.024	0.033	0.795	0.427	−0.029	0.067	2.859
Interpersonal difficulty	0.921	0.056	0.646	16.594	<0.001	0.812	1.03	2.568
Perceived stress	0.108	0.033	0.109	3.293	0.001	0.044	0.173	1.875
Neuroticism	0.071	0.022	0.128	3.19	0.002	0.027	0.115	2.715

AD = average daily; B = unstandardized coefficients; SE = standard error;  $\beta$  = standardized coefficients, *t* = *t*-value; CI = confidence interval; VIF = variance inflation factor.

#### 4. Discussion

This study used the Chinese version of the OI scale to investigate the anxiety symptoms of Chinese preschool teachers. This study found that 12.2% of Chinese preschool teachers showed obvious anxiety symptoms. A survey on the mental health status of preschool teachers in China in 2005 showed that anxiety prevalence was 9.4% [18]. With the COVID-19 pandemic, teachers' anxiety levels have changed significantly in recent years. A study included articles about teacher anxiety from 2019 to 2021 and found that teachers' anxiety level was 17% [26]. Most of the preschool teachers collected in this study were in their twenties and thirties, and the prevalence of anxiety symptoms of 12.2% is similar to these research results. The discrepancy, however, may be attributed to the differences in the tools measuring anxiety symptoms. It is noted that the current study focused on anxiety symptoms, the prevalence of which seemed to be high compared to that of anxiety disorders reported in the 48 reviewed articles, which showed that the prevalence of anxiety disorders was 2.5–9.1% among Asians [25].

Regarding the factors associated with anxiety symptoms, work-related stress was shown to be a significant predictor, consistent with a related study [51]. Even though working hours and sleeping hours were associated with anxiety, which is supported by other related studies [52], they became nonsignificant compared to other factors.

Second to work-related stress, interpersonal difficulties played an important role in anxiety. This was consistent with the study of Viana and Stevens [53]. It is to be noted that this finding is the first reported among preschool teachers. Other psychosocial factors included personality factors such as neuroticism and extroversion. People with high scores for neuroticism are always prone to emotional instability and are more likely to experience negative emotions such as fear and anxiety [54]. An extraverted personality factor means that one tends to focus more on the external environment or be able to derive satisfaction from it. They are usually sociable, enthusiastic, lively, and confident [55]. Low extraversion is closely related to anxiety [56,57]. There is no report on the personality traits and anxiety of preschool teachers. The current study found that both neuroticism and extraversion were related to anxiety. However, in the analyses of all factors combined, only neuroticism remained a significant factor, whereas extraversion was not. This could be because neuroticism is more closely related to anxiety than extraversion. The same was true for negative mental health, such as perceived stress [32,58], versus positive mental health factors, such as resilience and inner strength. Despite the fact that resilience predicted mental illness [35,59], it were overshadowed and became nonsignificant compared to negative factors such as neuroticism and perceived stress. In addition, unlike the current study, other researchers merely studied the association between resilience, perceived stress, and anxiety [32]. Additionally, that model did not include both positive and negative mental health factors and personality traits (extraversion, neuroticism) in the model like the present study.

It is worth noting that the current study is the first to explore the inner strength of preschool teachers. Inner strength reflects positive psychological characteristics, including generosity, morality, mindfulness/meditation, wisdom, perseverance, patience and endurance, truthfulness, determination, loving-kindness, and equanimity [45]. It was anticipated that inner strength would negatively predict anxiety, consistent with a study of Chinese salespersons [46]. However, like resilience, the inner strength effect became nullified when negative mental health factors were included. This could be because the relationship between anxiety is more closely related to negative mental health factors than positive mental health factors. Positive mental health might have a moderating role in a negative mental health outcome such as anxiety.

#### *4.1. Implication of This Study*

This research sought to illuminate the prevalence of anxiety as a significant mental health challenge faced by preschool teachers, a population that plays a crucial role in early childhood education. The findings underscore the urgent need for targeted workplace interventions and robust support systems tailored to the unique mental health challenges experienced by educators in this field. Understanding the specific mental health issues related to anxiety among preschool teachers allows school administrators to identify the influencing factors such as workload, emotional demands, and environmental stressors that contribute to heightened anxiety levels. By recognizing these factors, administrators can implement proactive measures to support at-risk people, fostering a healthier work environment and prioritizing mental well-being.

Moreover, this study's findings serve as a valuable resource for policymakers and educational leaders in developing comprehensive strategies and policies to enhance mental health support within educational settings. This could include the establishment of mental health resources, regular training on stress management techniques, and the promotion of a culture of openness regarding mental health issues. In addition, these results inform the recruitment process by highlighting the importance of selecting candidates with resilience and emotional intelligence, which are crucial for managing the demands of preschool teaching. By integrating these insights into hiring practices, educational institutions can ensure they attract individuals who are better equipped to navigate the complexities of the role, thereby reducing the likelihood of burnout and enhancing the overall quality of education provided to young children. Ultimately, this study addresses preschool teachers' immediate mental health concerns and paves the way for systemic changes that promote long-term well-being and success in the educational environment. By investing in the mental health of educators, we can improve their quality of life and the educational experiences of the children they serve.

#### *4.2. Limitations and Future Research*

Several limitations were encountered in this study. First, this study used an online questionnaire with snowball sampling, which limited the representativeness of the preschool teachers in China. Second, the data were obtained participants' self-reports, which could introduce social desirability biases; therefore, including a social desirability scale in future studies would help mitigate this issue. Third, this study's cross-sectional design prevented robust conclusions from being drawn about the causal relationships between predictors and outcomes. Therefore, random sampling and longitudinal studies should be encouraged to address these limitations.

### **5. Conclusions**

This study confirms the association between the presence of anxiety symptoms among Chinese preschool teachers and factors such as interpersonal problems, neuroticism, and perceived stress, as shown in other populations. Additionally, work-related stress was particularly highlighted among these studied participants. The results also shed light on the associations between anxiety symptoms, personality traits (extraversion), and positive

mental health factors (resilience and inner strengths). However, these are often overshadowed by other factors. Given its limitations, future research should aim to provide more robust evidence and broader generalizability. To support the mental well-being of preschool teachers in China, we can consider providing mental health support services, strengthening social support systems, offering mental health education training, and promoting the optimization of the working environment.

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