



## Research article

# Hindrance stressors and turnover intentions among preschool teachers: The mediating role of work engagement and the moderating effect of meaningful work

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## ABSTRACT

**Background:** Teacher turnover in preschool settings poses significant challenges to educational quality and stability. Understanding the factors that influence turnover intentions is crucial for developing effective retention strategies.

**Objective:** This study aims to explore the relationships between hindrance stressors and turnover intentions among preschool teachers, with a particular focus on the mediating role of work engagement and the moderating effect of meaningful work.

**Methods:** Participants were recruited from Shanghai, China. The study involved 220 preschool teachers, with a mean age of 32.35 years, the majority of whom were female. All participants completed the Hindrance Stressors Scale, the Turnover Intention Scale, the Work and Meaning Inventory, and the Utrecht Work Engagement Scale.

**Results:** Findings indicate a positive association between hindrance stressors and turnover intentions, partially mediated by decreased work engagement. Additionally, meaningful work was found to moderate the relationship between hindrance stressors and work engagement; it can mitigate the adverse effects of hindrance stressors on work engagement.

**Conclusion:** Addressing hindrance stressors and fostering work engagement and meaningful work are essential for mitigating turnover intentions. These insights offer valuable guidance for educational administrators in enhancing teacher retention and improving workplace well-being.

## 1. Introduction

The turnover of preschool teachers remains a critical issue worldwide, affecting educational quality and institutional stability [1]. High turnover rates among preschool teachers not only disrupt the continuity of early childhood education but also impose significant financial and operational burdens on educational institutions [2,3]. Understanding the factors that contribute to teachers' intentions to leave their positions is essential for developing effective strategies to enhance teacher retention and ensure a stable learning environment for children. This study, based on the Job Demands-Resources Model [4,5], aims to investigate how hindrance stressors affects turnover intentions, with a focus on the mediating role of work engagement and the moderating effect of meaningful work. This research aims to provide actionable insights for educational administrators to create more supportive and fulfilling work environments

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for preschool teachers.

### 1.1. Hindrance stressors and turnover intention

Turnover intention refers to the level of consideration and willingness of individuals to leave their current positions [6], and serves as a crucial predictor of actual turnover behavior [7]. The issue of high turnover rates among preschool teachers persists as a global concern [2,3,8,9]. The turnover intention of Chinese preschool teachers should be particularly alarming. A comprehensive study involving 14,392 preschool teachers across six provinces and cities in China revealed that over one-third exhibited intentions to leave their positions [10]. Turnover intentions not only hinder the professional development of teachers but also negatively impact student learning outcomes, inflate school recruitment and training costs, and undermine the stability and cohesion of teaching teams [11].

Addressing preschool teachers' turnover intentions necessitates an exploration of the factors contributing to their propensity to leave. Guided by the Job Demands-Resources Model [4,5], this study examines the impact of hindrance stressors on preschool teachers' turnover intentions. Hindrance stressors, such as organizational politics, role ambiguity or conflict, and job insecurity, are work-related stressors perceived as obstacles that are difficult to overcome, impeding the achievement of work goals and career development [12]. It is important to note that job stress can be categorized into challenge stressors and hindrance stressors [12]. Although challenge stressors may stimulate employee motivation and creativity, this study focuses on hindrance stressors due to their direct threat to individuals' career goals and satisfaction, thereby increasing the likelihood of turnover intentions. According to Transactional Theory, individuals assess stressors and subsequently determine their subsequent behavior [13,14]. Hindrance stressors may lead individuals to perceive significant work difficulties, impeding the smooth completion of tasks and reducing job satisfaction [15–17]. In such circumstances, individuals may begin to contemplate seeking alternative job opportunities to escape the pressures and challenges present in their current work environment. Therefore, within the Job Demands-Resources Model, hindrance stressors are regarded as negative job demands that can influence individuals' turnover intentions. Empirical studies have consistently demonstrated a significant positive correlation between hindrance stressors and turnover intentions [18–21].

### 1.2. Work engagement as the mediator

According to the Job Demands-Resources Model [4,5], aside from directly influencing turnover intentions, hindrance stressors may also affect turnover intentions through the mediating role of work engagement. Work engagement is characterized by employees' enthusiasm and dedication toward their work, encompassing aspects such as vigor, dedication, and absorption [22]. It is a significant predictor of job satisfaction and organizational commitment [2,23,24]. The Job Demands-Resources Model posits that high job demands coupled with insufficient job resources may lead to elevated levels of hindrance stressors, resulting in decreased work engagement. For instance, when teachers encounter setbacks, conflicts, or unfair treatment at work, they may feel demoralized and helpless, leading to reduced work engagement [16,25,26]. This reduction in work engagement can further escalate teachers' turnover intentions, as they may perceive an inability to fulfill their needs and goals within the current work environment [27–29].

The Conservation of Resources (COR) Theory [30] provides additional insights into this mediation mechanism. According to COR Theory, individuals strive to obtain, retain, and protect their resources, and stress occurs when these resources are threatened or depleted. Hindrance stressors can be viewed as threats to teachers' resources, consuming their energy and time, and reducing their work enthusiasm and efficiency. Work engagement, in turn, can be considered a valuable resource, representing an individual's investment in their work, including time, energy, and emotions. When teachers face hindrance stressors, they might prioritize coping with the immediate threats, which leaves fewer resources available for engagement in their work. As a result, the reduction in work engagement can lead to turnover intentions since teachers may not receive sufficient rewards and satisfaction from their work and perceive the high resource consumption as unsustainable. Thus, COR Theory supports the pathway through which hindrance stressors reduce work engagement, ultimately leading to teachers' turnover intentions. Empirical research has also identified work engagement as a mediator in the relationship between work environment factors (e.g., workplace bullying), job characteristics, and turnover intentions [31,32]. Therefore, by integrating the Job Demands-Resources Model, the Conservation of Resources Theory, and empirical findings, it is evident that work engagement mediates the relationship between hindrance stressors and turnover intentions.

### 1.3. Moderation of meaningful work

Meaningful work encompasses individuals' subjective experience of perceiving their work as significant and valuable, including aspects such as positive meaning, meaning-making, and greater good motivation [33]. Meaningful work is regarded as a personal resource because it reflects individuals' subjective experience of the significance and importance of their work, aiding employees in recognizing the broader purpose of their daily tasks and allocating more attentional resources to work activities [34]. Meta-analytic research has identified a positive correlation between meaningful work and work engagement, commitment, and job satisfaction, leading to higher self-rated job performance, increased organizational citizenship behavior, and reduced withdrawal intentions [35].

The Job Demands-Resources Model suggests that the impact of job demands (e.g., hindrance stressors) on work motivation may be moderated by personal resources [4,5]. Personal resources refer to the beliefs, individuals hold regarding their control over their environment, with a direct positive effect on work motivation, such as work engagement. Additionally, personal resources are expected to buffer the negative impact of job demands on strain [4].

The Conservation of Resources Theory (COR) posits that individuals are inclined to protect and accumulate resources, and threats or losses of these resources induce stress [30]. Meaningful work can be seen as an important personal resource that enhances

individuals' psychological resilience and coping capacity. When individuals perceive their work as meaningful, they have more intrinsic resources to cope with hindrance stressors and alleviate the depletion effect of stress. The enhancement of resources (through increased meaningful work) can neutralize the adverse impact of stress on work engagement, allowing individuals to remain focused on their work even under pressure. Enhanced meaningful work can also help individuals reassess and reinterpret stressful situations, thereby reducing the perceived intensity of stress, increasing work engagement, and lowering turnover intentions. For example, research has found that meaningful work can buffer the negative effects of hindrance stressors on job burnout [34]. Therefore, based on the "buffer" hypothesis in the Job Demands-Resources model and Conservation of Resources Theory, meaningful work is predicted to mitigate or reverse the energy depletion process caused by high job demands, thereby preventing a decrease in work engagement due to work pressure. Specifically, for teachers who perceive their work as more meaningful, the negative relationship between hindrance stressors and work engagement is expected to weaken.

#### 1.4. The current study

Understanding preschool teachers' turnover intentions is essential for optimizing educational policies, improving teacher welfare, and reducing turnover rates. By comprehending the factors influencing turnover intentions, educational administrators can take measures to enhance the work environment, provide more career development opportunities, and increase teacher job satisfaction and retention rates. Many studies have found that work stress faced by preschool teachers is a significant factor leading to their turnover [19–21]. However, existing research has not differentiated between challenge stressors and hindrance stressors, nor has it clarified the mechanism through which stress affects turnover intentions. Therefore, guided by the Job Demands-Resources Model, this study examines the impact of hindrance stressors on preschool teachers' turnover intentions and further explores the roles of work engagement and meaningful work in this relationship, as depicted in Fig. 1. Specifically, this study posits three hypotheses.

**H1.** Hindrance stressors will have a positive relationship with turnover intention.

**H2.** Work engagement will play a mediating role in the relationship between hindrance stressors and turnover intention.

**H3.** Meaningful work will moderate the positive relationship between hindrance stressors and work engagement, such that the relationship will be weaker for teachers who perceive their work to be more meaningful.

## 2. Methods

### 2.1. Participants

The study focused on preschool teachers with more than one year of teaching experience who were actively engaged in classroom teaching. New teachers with less than one year of experience and administrative staff not involved in teaching activities were excluded from the study. This criterion was established to ensure that our research captured the work stress and turnover intentions of experienced preschool teachers actively involved in educational activities. A total of 220 preschool teachers participated in this study, with an average age of 32.35 years ( $SD = 7.70$ ). The average teaching experience of the participants was 3.08 years ( $SD = 1.67$ ). Among them, 219 were female teachers (99.5 %), while male teachers accounted for only 1 individual. In terms of educational background, 26.4 % of teachers had a college degree or below, and 73.6 % had a bachelor's degree or higher.

### 2.2. Procedure

This research employed a cross-sectional design to investigate the relationships between hindrance stressors, work engagement, meaningful work, and turnover intentions among preschool teachers. Data were collected through self-administered questionnaires at a single time point. This design was chosen to provide a snapshot of the current state of these variables among our target population.

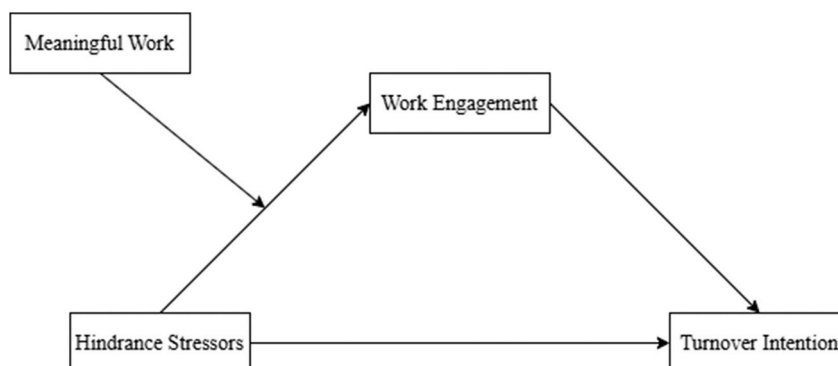


Fig. 1. The hypothesized model.

Before data collection, the study obtained approval from the Research Ethics Committee of Shanghai Normal University (ethical approval number: 2024021). The participants of this study were recruited from Shanghai, and the research data were collected through online survey platform “Wenjuanxing”. During the data collection process, researchers introduced the research objectives to preschool teachers. Subsequently, researchers invited preschool teachers who were interested in participating in the study to fill out the questionnaires. Additionally, all participants obtained informed consent through the kindergartens involved in the study. Participants volunteered to take part in the study and had the option to withdraw at any time.

### 2.3. Measures

#### 2.3.1. Hindrance stressors

The Challenge-Hindrance Stressors (CHS) scale developed by Cavanaugh et al. [12] and revised into Chinese by Li et al. [36] was utilized. This scale consists of 11 items across 2 dimensions, with 6 items measuring challenge stressors and 5 items measuring hindrance stressors. This study focused on the hindrance stressors sub-dimension, with items such as “I feel insecure in my job”, rated on a 5-point Likert scale (1 = no stress, 5 = high stress), where higher scores indicate higher levels of perceived hindrance stressors. The hindrance stressors scale demonstrated good reliability in this study (Cronbach’s  $\alpha = 0.888$ ).

#### 2.3.2. Turnover intention

The Turnover Intention scale developed by Mobley et al. [37] and translated into Chinese by Weng and Xi [38] was used. This 4-item scale assesses whether employees have changed their perception of the organization, their intention to leave, intention to seek new employment, and the likelihood of finding new employment (e.g., “I am likely to leave my current organization in the next six months”). The questionnaire showed good applicability among preschool teachers [28] using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), where higher scores indicate a higher turnover intention. The scale exhibited good reliability in this study (Cronbach’s  $\alpha = 0.861$ ).

#### 2.3.3. Work engagement

The Utrecht Work Engagement Scale (UWES) developed by Schaufeli et al. [22] and revised into Chinese by Zhang and Gan [39] was employed. This scale comprises three dimensions: Vigor, Dedication, and Absorption. Schaufeli et al. [40] later shortened the UWES to include one representative item per dimension, totaling 3 items (e.g., “I am full of energy when working”). Using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), higher scores indicate greater work engagement. The scale demonstrated good reliability in this study (Cronbach’s  $\alpha = 0.911$ ).

#### 2.3.4. Meaningful work

The Work and Meaning Inventory (WAMI) developed by Steger and Dik [33] and revised into Chinese by Mu [41] was utilized. This scale consists of three dimensions: positive meaning, meaning making through work, and great good motivations, with a total of 10 items (e.g., “I have found a meaningful job”). Rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), higher scores indicate a higher sense of meaningful work. The scale showed good reliability in this study (Cronbach’s  $\alpha = 0.897$ ).

### 2.4. Statistical analysis

Statistical software used in this study included SPSS 27.0 and R. To address potential common method bias, a confirmatory factor analysis was conducted. Mediation and moderation analyses were conducted using the PROCESS macro program in SPSS, with teachers’ age and education level included as control variables. To visually represent moderation effects more clearly, Johnson-Neyman plots were generated using the interactions package in R [42]. All data were analyzed based on standardized scores.

**Table 1**  
Descriptive statistics and correlations between variables.

Variable	<i>M</i> ± <i>SD</i>	1	2	3	4	5
1 Teacher age	32.35 ± 7.699	1				
2 Teacher education	–	0.047	1			
3 Hindrance stressors	2.463 ± 0.896	0.070	0.125	1		
4 Turnover intention	1.894 ± 0.854	–0.118	–0.083	0.429**	1	
5 Work engagement	4.071 ± 0.796	0.038	–0.003	–0.355**	–0.566**	1
6 Meaningful work	4.209 ± 0.692	0.065	0.148*	–0.324**	–0.609**	0.626**

Note. *M* = Mean; *SD* = Standard Deviation, Teacher education: 0 = junior college education and below, 1 = college education or above.

\*  $p < .05$ .

\*\*  $p < .01$ .

### 3. Results

#### 3.1. Test for common method bias and preliminary analyses

As the data for this study were all collected through questionnaires, the potential existence of common method bias was considered. To address this concern, a common method bias test recommended by Podsakoff et al. was conducted [43]. Subsequently, a confirmatory factor analysis was carried out to determine if a single factor could explain all the variability in the study data. The results indicated a poor model fit ( $\chi^2/df = 8.124$ ,  $RMSEA = 0.180$ ,  $TLI = 0.605$ ,  $CFI = 0.643$ ,  $SRMR = 0.129$ ), suggesting that there was no notable common method bias present in the data.

Table 1 presents the means, standard deviations, and correlation coefficients of all research variables. From Tables 1 and it can be observed that hindrance stressors is positively correlated with turnover intention, while hindrance stressors is negatively correlated with work engagement and meaningful work. Furthermore, both work engagement and meaningful work are negatively correlated with turnover intention, with work engagement being positively correlated with meaningful work.

#### 3.2. Mediating model analysis

This study hypothesized that work engagement mediates the relationship between hindrance stressors and turnover intention. Following the mediation analysis procedure proposed by Wen and Ye [44], the relationship between the independent variable and the dependent variable was first examined. As shown in Table 2, after controlling for covariates, the results indicate a significant positive correlation between hindrance stressors and turnover intention ( $\beta = 0.456$ ,  $p < 0.001$ ). Thus, Hypothesis 1 was supported.

Subsequently, the mediating variable was included in the model for further analysis. The PROCESS macro Model 4 was employed to test the mediating effect of work engagement. The results reveal a negative relationship between hindrance stressors and work engagement ( $\beta = -0.364$ ,  $p < 0.001$ ), and a negative relationship between work engagement and turnover intention ( $\beta = -0.459$ ,  $p < 0.001$ ). Importantly, there is a significant positive correlation between hindrance stressors and turnover intention at this stage ( $\beta = 0.289$ ,  $p < 0.001$ ). Therefore, work engagement partially mediates the relationship between hindrance stressors and turnover intention. Further mediation analysis demonstrates that the mediating effect of work engagement is significant (mediator effect =  $0.167$ ,  $SE = 0.041$ ,  $95\% CI = [0.096, 0.254]$ ), with a ratio of 36.62 % compared to the total effect. Hence, Hypothesis 2 was confirmed.

#### 3.3. Moderation analysis

This study utilized the PROCESS macro Model 7 to investigate whether meaningful work moderates the relationship between hindrance stressors and work engagement. The results are presented in Table 3. The interaction term between hindrance stressors and meaningful work is significantly positively related to work engagement ( $\beta = 0.221$ ,  $p < 0.001$ ). Thus, Hypothesis 3 was supported. The moderated mediation results are depicted in Fig. 2.

To further explore how meaningful work moderates the relationship between hindrance stressors and work engagement, a Johnson-Neyman plot was used to illustrate the moderating effect of meaningful work. As shown in Fig. 3, as meaningful work increases, the detrimental impact of hindrance stressors on work engagement diminishes. When meaningful work reaches a certain level (greater than or equal to 0.4), the influence of hindrance stressors on work engagement is no longer significant. This indicates that meaningful work can mitigate the adverse effects of hindrance stressors on work engagement.

In addition, meaningful work can moderate the indirect pathway of hindrance stressors on turnover intention through work engagement. Simple slope analysis revealed that when meaningful work is at a lower level (below one standard deviation from the mean), the indirect effect of hindrance stressors on turnover intention through work engagement is significant, indicating a negative impact of hindrance stressors on turnover intention via work engagement. However, when meaningful work is at a higher level (above

**Table 2**  
Testing the mediation effect of work engagement on turnover intention.

Predictors	Model 1 (Turnover intention)			Model 2 (Work engagement)			Model 3 (Turnover intention)		
	$\beta$	<i>t</i>	95%CI	$\beta$	<i>t</i>	95%CI	$\beta$	<i>t</i>	95%CI
Age	-0.144*	-2.395	(-0.263, -0.025)	0.062	0.969	(-0.064, 0.187)	-0.116*	-2.191	(-0.22, -0.012)
Education	-0.302*	-2.209	(-0.572, -0.033)	0.091	0.625	(-0.195, 0.376)	-0.261*	-2.172	(-0.498, -0.024)
Hindrance stressors	0.456***	7.527	(0.336, 0.575)	-0.364***	-5.681	(-0.49, -0.238)	0.289***	5.076	(0.177, 0.401)
Work engagement							-0.459***	-8.148	(-0.57, -0.348)
$R^2$	0.224			0.131			0.407		
<i>F</i>	20.746***			10.879***			36.866***		

Note.  $\beta$  = standardized regression coefficient. *t* = t-statistic, indicates the significance of the beta coefficient. 95 % CI = 95 % Confidence Interval, Shows the range where the true beta coefficient value is likely to fall.  $R^2$ : Explains the proportion of variance in the outcome explained by predictors. *F*: Tests the overall model significance in predicting the outcome. Teacher education: 0 = junior college education and below, 1 = college education or above.

\*  $p < .05$ .

\*\*\*  $p < .001$ .

**Table 3**  
Testing the moderated effect of meaningful work.

Predictors	Work engagement		
	$\beta$	<i>t</i>	95 % CI
Age	0.033	0.65	(-0.067, 0.133)
Education	-0.17	-1.462	(-0.4, 0.059)
Hindrane stressors	-0.185	-3.397**	(-0.292, -0.078)
Meaningful work	0.573	10.563***	(0.466, 0.68)
Hindrane stressors Meaningful work	0.221	4.093***	(0.114, 0.325)
$R^2$	0.465		
<i>F</i>	37.147***		

Note.  $\beta$  = standardized regression coefficient. *t* = t-statistic, indicates the significance of the beta coefficient. 95 % CI = 95 % Confidence Interval, Shows the range where the true beta coefficient value is likely to fall.  $R^2$ : Explains the proportion of variance in the outcome explained by predictors. *F*: Tests the overall model significance in predicting the outcome. Teacher education: 0 = junior college education and below, 1 = college education or above. \*\*  $p < .01$ , \*\*\*  $p < .001$ .

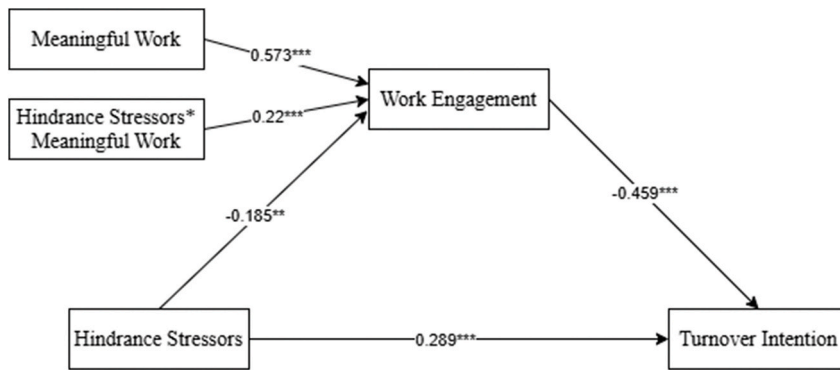
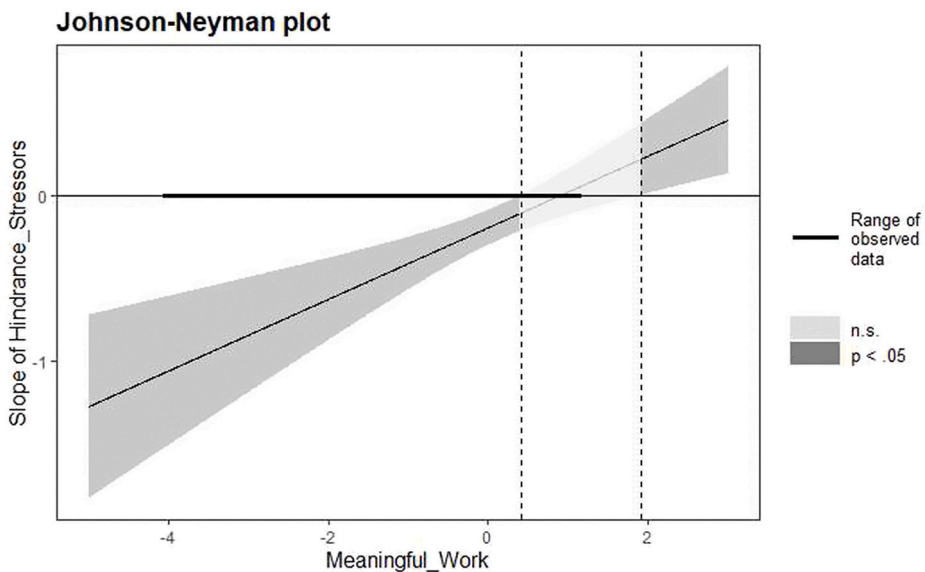


Fig. 2. The path coefficients for the moderated mediation model.



**Fig. 3.** Johnson-Neyman plot demonstrates the moderating effect of meaningful work on the relationship between hindrance stressors and work engagement.

Note: The Y-axis shows the regression coefficient of hindrance stressors on work engagement, while the X-axis represents the values of meaningful work. In this study, meaningful work values range from -4.06 to 1.14. The bold solid line represents the simple regression coefficient, illustrating how hindrance stressors and work engagement vary with different levels of meaningful work. The shaded area corresponds to the 95 % confidence interval, indicating the division of statistical significance. The significant region is shown in black, while the non-significant region is in gray. The vertical dashed line represents the boundary of the significant region.

one standard deviation from the mean), this indirect effect is no longer significant. Refer to Table 4 for details. Therefore, meaningful work moderates the entire indirect pathway, showing that as meaningful work increases, the negative impact of hindrance stressors on turnover intention through work engagement diminishes.

#### 4. Discussion

##### 4.1. Key findings

This study’s findings reveal a significant positive correlation between hindrance stressors and turnover intentions among preschool teachers. Previous research has established a significant relationship between hindrance stressors and turnover intentions among employees [18,19] and identified work stress as a critical factor for turnover intentions among preschool teachers [8,28]. This study extends these findings by highlighting hindrance stressors as a crucial determinant of turnover intentions in the preschool teacher cohort, thereby deepening and complementing existing research. The theoretical significance of this result lies in its support for the applicability of the Job Demands-Resources model to preschool teachers, suggesting that high levels of hindrance stressors can lead to negative outcomes, such as increased turnover intentions. Furthermore, this finding underscores the need for educational administrators to pay attention to the hindrance stressors faced by preschool teachers and to implement measures to mitigate these stresses, thereby reducing their turnover intentions.

Moreover, this study discovered that work engagement mediates the relationship between hindrance stressors and turnover intentions. This indicates that hindrance stressors increases turnover intentions by diminishing teachers’ work engagement, aligning with the findings of Coetzee and van Dyk [32], who noted that work engagement mediates the relationship between workplace bullying, a form of hindrance stressors, and turnover intentions. This research confirms a similar conclusion within the preschool teacher population. The significance of this finding lies in its contribution to a deeper understanding of the role of work engagement in the relationship between work stress and turnover intentions, supporting the notion of work engagement as a vital link between the work environment and employee behavioral outcomes. Thus, enhancing teachers’ work engagement can not only improve their performance but also serve as an effective strategy to alleviate the turnover intentions caused by hindrance stressors.

Lastly, the study reveals that meaningful work can moderate the relationship between hindrance stressors and work engagement. Specifically, when teachers perceive their work as highly meaningful, the negative correlation between hindrance stressors and work engagement weakens, thereby reducing turnover intentions. This finding is consistent with Lavy [45], who found that a sense of meaning at work may decrease burnout and increase engagement, and Meng et al. [34], who discovered that meaningful work buffers the negative impact of hindrance stressors on job burnout. This result supports and supplements the Job Demands-Resources model by emphasizing the importance of personal resources, such as meaningful work, as a significant personal resource that can help employees cope with work-related stress and challenges. Therefore, enhancing the sense of meaningful in work can be considered an effective strategy to mitigate the impact of hindrance stressors on turnover intentions.

##### 4.2. Limitations and future directions

This study has several limitations that suggest directions for future research. Firstly, the cross-sectional design limits our ability to establish causal relationships among the variables. Future studies should consider adopting a longitudinal approach to track changes over time, providing a more dynamic understanding of how hindrance stressors influences turnover intentions mediated by work engagement. Additionally, incorporating qualitative methods, such as interviews or focus groups, could enrich the quantitative data and offer a more nuanced understanding of preschool teachers’ experiences and perceptions of hindrance stressors and meaningful work.

Secondly, the demographic focus of this study, predominantly female teachers from the Shanghai region, limits the generalizability of the findings. Future research should aim to include a more diverse sample, encompassing male teachers and educators from various geographical locations within China or internationally. A multi-center study extending across different provinces could improve the generalizability of the findings across diverse educational settings and cultural contexts.

Lastly, this study focused solely on hindrance stressors, leaving room for future research to explore the differential effects of challenge and hindrance stressors on turnover intentions. Challenge stressors, such as high workload or time pressure, may have distinct impacts on work behavior compared to hindrance stressors. The debate on the impact of these stressors on work behavior remains unresolved. Research on company employees revealed that both challenge stressors and hindrance stressors significantly reduced work engagement and positive emotion [46], while being positively associated with psychological strains and turnover intentions [20]. Conversely, a study on primary school teachers found that daily hindrance job demands were negatively correlated with

**Table 4**  
The mediating effect of work engagement at different levels of meaningful work.

	Meaningful work	Effect	BootSE	95 % CI
Mediation effect of hindrance stressors on work engagement	-1(M - 1SD)	0.187	0.063	(0.067, 0.306)
	0 (M)	0.086	0.032	(0.023, 0.150)
	1 (M + 1SD)	-0.153	0.039	(-0.090, 0.064)

Note. M = Mean; SD = Standard Deviation, 95 % CI = 95 % Confidence Interval.

daily positive affect and work engagement, whereas daily challenge job demands showed a positive relationship with positive affect and work engagement [25]. The consistency of the effects of challenge and hindrance stressors on work attitudes and behaviors for preschool teachers remains to be explored. Future studies could employ a dual-pathway model within the Job Demands-Resources model framework to investigate how these different types of stressors might affect preschool teachers' well-being and work outcomes, potentially leading to a more comprehensive understanding of stress dynamics in educational settings.

### 4.3. Practical implications

The findings of this study offer several practical implications for the management and support of preschool teachers. Firstly, the significant role of hindrance stressors in predicting turnover intentions underscores the urgent need for educational administrators to identify and mitigate sources of hindrance stressors among teachers. This could involve conducting regular stress assessments, providing supportive work environments, and implementing policies that reduce unnecessary workload and bureaucratic obstacles. For instance, administrators could streamline administrative processes, offer flexible working hours, or provide additional support staff to alleviate non-teaching responsibilities.

Secondly, the mediating role of job engagement between hindrance stressors and turnover intentions highlights the importance of fostering a highly engaged teaching workforce. Educational leaders could implement strategies to enhance job engagement, such as establishing mentorship programs, creating opportunities for collaborative teaching, and ensuring regular feedback and recognition of teachers' efforts. Additionally, providing professional development opportunities tailored to individual teachers' needs and interests can boost engagement and job satisfaction.

Lastly, the moderating effect of meaningful work suggests that enhancing the perceived meaningfulness of teachers' work can serve as a buffer against the negative impacts of hindrance stressors. To achieve this, educational administrators should focus on aligning teachers' work with their personal values and goals. This could involve regular discussions about the impact of their work on students' lives, involving teachers in curriculum development, and creating opportunities for teachers to contribute to decision-making processes that affect their work and the educational community. Furthermore, showcasing success stories and the long-term impact of early childhood education can reinforce the significance of preschool teachers' roles.

At a broader policy level, these findings suggest the need for systemic changes in teacher training programs, workload management, and professional development opportunities. Policymakers should consider revising teacher education curricula to include stress management techniques and strategies for finding meaning in work. Additionally, implementing policies that ensure adequate staffing ratios and provide resources for teacher support programs could contribute to reducing hindrance stressors and improving retention rates in the preschool education sector.

## 5. Conclusion

This study provides valuable insights into the complex dynamics of hindrance stressors, work engagement, meaningful work, and turnover intentions among preschool teachers. Our findings reveal a significant positive association between hindrance stressors and turnover intentions, mediated by work engagement. Importantly, we discovered that meaningful work moderates the relationship between hindrance stressors and work engagement, potentially mitigating the adverse effects of stress on teacher retention.

These results underscore the critical importance of addressing hindrance stressors in preschool educational settings. By focusing on enhancing work engagement and fostering a sense of meaningfulness in teachers' work, educational administrators can develop more effective strategies to reduce turnover intentions. This approach not only benefits individual teachers but also contributes to the overall stability and quality of early childhood education.

Our research extends the application of the Job Demands-Resources model to the preschool teaching context, highlighting the interplay between job demands (hindrance stressors) and personal resources (meaningful work). This theoretical contribution paves the way for future studies to further explore the nuanced relationships between various types of stressors and work outcomes in educational settings.

In conclusion, this study offers a comprehensive framework for understanding and addressing turnover intentions among preschool teachers. By emphasizing the importance of creating supportive, engaging, and meaningful work environments, our findings provide actionable insights for educational policymakers and administrators. Implementing strategies that reduce hindrance stressors, promote work engagement, and enhance the perceived meaningfulness of teaching can significantly contribute to improving teacher retention and, consequently, the quality of early childhood education.

### Ethical approval statement

Approval was obtained from the ethics committee of Shanghai Normal University (the ethical approval number is 2024021). Before participating in the research, all participants were provided with a clear explanation of the research objectives and procedures and signed informed consent forms.

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### Data availability statement

The datasets used or analyzed during the current study are available from the corresponding author upon reasonable request.

### CRediT authorship contribution statement

**Jinghui Zhang:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Yu Chen:** Writing – review & editing, Writing – original draft, Data curation. **Yige Xu:** Writing – review & editing. **Yan Li:** Writing – review & editing, Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

### Declaration of AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) utilized GPT-4 to enhance language and readability. Following the use of this tool, the author(s) reviewed and edited the content as necessary and take full responsibility for the publication's content.

### Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Yan Li reports financial support was provided by STI 2030 Major Projects. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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