Environment and Social Psychology (2026) Volume 11 Issue 2 ISSN: 2424-8975 (O)
doi: 10.59429/esp.v11i2.4440 2424-7979 (P)

RESEARCH ARTICLE

The impact of work pressure on nurses' work engagement: A moderated mediation model

Hongxuan Yan[1], Nurulilyana Sansuddin[1], Yutian Liao[2], Khairilmizal Bin Samsudin[1,3,*]

[1] *School of Health Sciences Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan. Malaysia.*

[2] *Zhuzhou Hospital Affiliated to Xiangya School of Medicine, Central South University, Zhuzhou, Hunan, China*

[3] *Rabdan Academy, Plot C60 Zone E 40, Danet, Abu Dhabi, PO Box 114646, United Arab*

*** Corresponding author:** Khairilmizal Bin Samsudin, ksamsudin@ra.ac.ae

ABSTRACT

Against the backdrop of medical tax reform and escalating doctor-patient conflicts, the workload of nurses in China has surged, with resignation rates rising year after year. Based on this context, this study draws on resource conservation, social cognition, and ecosystem theories to construct an intermediary model of 'work pressure → self-efficacy → work engagement,' and introduces social support as a moderating variable to establish a moderated intermediary model. In terms of sampling methods, stratified cluster sampling was employed to select 765 clinical nurses from first- to third-level hospitals in Province S, China, for a cross-sectional questionnaire survey. The study results revealed: first, work stress significantly negatively impacts work engagement ($\beta = -0.170$, $p < 0.001$); Second, self-efficacy partially mediated this relationship, with work stress reducing work engagement by lowering self-efficacy, accounting for 10.88% of the total effect; Third, social support significantly moderated the effect of work stress on work engagement, with social support significantly alleviating the negative impact of work stress on work engagement; Finally, the moderated mediation model holds true, with social support significantly moderating the first half of the mediation chain 'work pressure—self-efficacy—work engagement.' Specifically, when nurses receive higher levels of social support, the negative chain of work pressure reducing work engagement by weakening self-efficacy is significantly buffered; conversely, in low-support situations, this negative transmission is more pronounced. The findings of this study suggest that hospitals can effectively break the vicious cycle of 'high stress—low self-efficacy—low work engagement' by strengthening self-efficacy training and establishing blended online and offline support networks. This approach provides feasible strategies for stabilising the nursing workforce and enhancing patient experience under the DRG reform framework.

Keywords: work stress; work engagement; self-efficacy; social support

1. Introduction

1.1. Research background

Against the dual backdrop of the "Double Reduction" policy and reforms to the salary system in public hospitals, Chinese nurses are facing unprecedented pressure from reduced workloads and performance-based

ARTICLE INFO
Received: 10 December 2025 | Accepted: 28 January 2026 | Available online: 06 February 2026

CITATION
Yan HX, Sansuddin N, Liao YT, et. al. The impact of work pressure on nurses' work engagement: A moderated mediation model. *Environment and Social Psychology* 2026; 11(2): 4440 doi:10.59429/esp.v11i2.4440

stress[1]. On one hand, the payment reform requires clinical departments to achieve higher nursing quality standards with fewer staff; on the other hand, the realities of tight medical resources, increased patient rights awareness, and intensive night shifts have made nurses a high-risk group for occupational burnout[2]. According to the National Health and Health Talent Development Report released by the National Health Commission of China in 2023, the turnover rate of nurses in secondary and above public hospitals has risen to 11.7% for three consecutive years, with nurses under 35 years old accounting for over 60%[3]. Behind the resignation wave lies a vicious cycle of "high stress—low investment—resignation": nurses reduce their emotional investment due to emotional exhaustion, thereby lowering the quality of care, triggering more conflicts between doctors and patients, and further increasing stress[4]. Breaking this cycle has become a focal point for hospital administrators and policymakers. However, existing research has largely focused on the linear "stress-burnout" pathway, neglecting the synergistic effects of individual and situational resources among nurses, particularly lacking a systematic integration of 'internal psychological mechanisms' and "external support boundaries."

This study constructs a moderated mediation model with self-efficacy as the mediator and social support as the moderator to explore 'how and when' work stress affects nurses' work engagement. The widespread use of social media platforms such as WeChat, DingTalk, and Enterprise WeChat has provided nurses with unprecedented channels for real-time communication and emotional exchange. At the same time, new forms of social support, such as departmental WeChat groups, night shift mutual aid groups, and online psychological hotlines[5], are reshaping the traditional single-mode system of 'mentor-apprentice guidance' and 'nurse manager care.' This study selected 765 clinical nurses from two first-level hospitals, two second-level hospitals, and two third-level hospitals in Province S, China, based on their high-intensity and high-representative industry characteristics: they are both direct bearers of the pressure from DRG reform and frequent users of hospital official WeChat accounts and department WeChat groups, enabling the testing of the regulatory effectiveness of 'online + offline' mixed social support in real-world scenarios. By mapping the micro-psychological chain of 'stress → efficacy → commitment' and delineating the boundary conditions of 'high vs. low social support,' this study not only provides precise intervention targets for nursing management but also offers a replicable and scalable Chinese model for public hospital digital transformation and employee experience enhancement.

Existing research predominantly employs either the Buffering Model or the Job Demands-Resources Model (JD-R) to examine occupational mental health issues among nurses. The Buffering Model emphasises social support as an external resource capable of mitigating the direct impact of stressors on individual wellbeing, focusing on the "emergency buffering" function of support; The JD-R model, however, centres on the dual structure of job characteristics, positing that the mismatch between high job demands and low job resources directly leads to burnout, while adequate resources promote work engagement. Although these frameworks offer crucial perspectives for understanding the stress-outcome relationship, both exhibit notable limitations: the buffering model fails to explain how stress progressively erodes work engagement through internal psychological mechanisms, treating social support solely as an external moderator while overlooking its influence on the generation of internal psychological resources; While the JD-R model distinguishes between demands and resources, its exploration of resource effects largely remains at the level of main effects, failing to elucidate how external support modulates stress transmission pathways by influencing individual cognitive evaluations.

To overcome these limitations, this study integrates Conservation of Resources Theory (COR), Social Cognitive Theory, and Ecological Systems Theory to construct a multi-level integrative framework. Compared to existing models, the theoretical advancement of this research manifests across three dimensions:

Firstly, it introduces self-efficacy as a mediating mechanism. Drawing upon Social Cognitive Theory, it reveals the micro-psychological chain of 'stress → depletion of psychological resources → behavioral withdrawal'. This addresses the traditional framework's oversight of the 'black box' in stress transmission, clarifying that work stress does not directly inhibit engagement but indirectly reduces work participation by undermining individuals' belief in their own capabilities (self-efficacy). Secondly, it transcends buffer models' narrow focus on support's direct moderation of the stress-outcome relationship. By situating social support within a multi-level nested system grounded in ecological theory, it demonstrates that support not only directly buffers stress but also, by regulating the 'stress → self-efficacy' This expands our understanding of support mechanisms, demonstrating that external resources can permeate the psychological level to shield core self-evaluation from stress erosion.

1.2.Research questions and objectives

Based on the above background, this study addresses the following research questions:

RQ1: What is the direction and magnitude of the effect of work stress on nurses' work engagement?

RQ2: Does self-efficacy mediate the relationship between work stress and work engagement? Specifically, does work stress indirectly reduce work engagement by lowering self-efficacy?

RQ3: Does social support moderate the direct relationship between work stress and work engagement? Specifically, does the negative effect of work stress on engagement weaken when nurses perceive higher levels of social support?

RQ4: Does social support moderate the mediated pathway (i.e., moderated mediation)? Specifically, does the mediating effect of self-efficacy strengthen or weaken depending on the level of social support perceived by nurses?

Correspondingly, the research objectives of this study are: To examine the direct effect of work stress on nurses' work engagement and verify the baseline proposition that high stress significantly weakens work engagement; To investigate the mediating role of self-efficacy in the relationship between work stress and work engagement, thereby validating the psychological chain of "stress → psychological resources → behavioral outcomes"; To explore the moderating effect of social support on the relationship between work stress and work engagement, thereby delineating the boundary conditions of the support context; To construct and empirically validate a comprehensive moderated mediation model that integrates direct effects, indirect effects, and conditional effects, providing a holistic understanding of how and when work stress influences nurses' work engagement.

2. Literature review

2.1. Concept definition

Work-related stress: In occupational settings, when external work demands (such as task volume, time constraints, role conflicts, and organisational changes) are out of balance with an individual's internal resources (such as abilities, energy, and social support), this can lead to a persistent state of physical and mental tension[6]. This state encompasses both subjective psychological experiences—such as anxiety, helplessness, and burnout—and objective physiological responses—such as increased heart rate, sleep disorders, and impaired immunity[7]. Its sources are diverse: excessive task loads, circadian rhythm disruptions caused by shift work schedules, risks of errors in nursing procedures, high expectations from patients and their families, scarcity of promotion opportunities, and insufficient support from colleagues and managers can all serve as stressors[8]. If stress is not alleviated over the long term, individual resources are

continuously depleted, leading to emotional exhaustion, cognitive decline, reduced work engagement, and even intentions to resign. Conversely, moderate stress can also serve as a motivator, stimulating individual learning and adaptation[9].

Work engagement: The positive, fulfilling, and focused psychological state exhibited by individuals in the workplace, whose core characteristics can be summarised as three dimensions: vitality, dedication, and focus[10]. Vitality manifests as high energy, fearlessness in the face of challenges, and a willingness to sustain physical and emotional investment; dedication reflects a strong sense of meaning in one's work, approaching tasks with passion and taking pride in them; and focus means being fully immersed in the work itself, often entering a state of flow where time perception is diminished. This concept originates from the job demands-resources model, which emphasises that when individuals perceive sufficient job resources (such as colleague support and growth opportunities), they exhibit high levels of engagement across cognitive, emotional, and behavioral dimensions[11]. Highly engaged employees are not only more efficient and innovative but also actively spread positive emotions, enhancing team morale. However, prolonged high-pressure environments, role conflicts, or resource shortages can diminish engagement levels, leading to burnout and intentions to leave[12].

Self-efficacy: An individual's confidence in their ability to successfully complete specific tasks or respond to specific situationse[13], proposed by psychologist Bandura, is considered a core variable influencing motivation, emotions, and behavior[14]. It is not an objective assessment of ability but rather a subjective belief in one's own ‘ability to,’ directly determining whether individuals are willing to invest effort, how long they persist, and their recovery speed in the face of setbacks[15]. In nursing contexts, nurses with high self-efficacy believe they can accurately perform complex procedures, effectively communicate patient needs, and appropriately handle emergencies, enabling them to maintain a positive mindset and high-level performance even in high-pressure and demanding environments. Conversely, those with low self-efficacy are prone to anxiety and avoidance of challenges due to doubts about their abilities, which can impair work engagement and career development[16]. Self-efficacy is shaped by four types of information sources: direct experience, vicarious experience, verbal persuasion, and emotional arousal. It can be enhanced through successful experiences, role model demonstrations, positive feedback, and emotional regulation training, serving as an important psychological bridge connecting external resources with individual behavioral performance[17].

Social support: The totality of material, emotional, and informational resources an individual receives from others or organisations in work and life contexts, including listening and encouragement from colleagues, supervisors, family members, and friends, as well as training, benefits, flexible systems, and online community interactions provided by organisations[18]]. According to social support theory, it can be divided into four forms: emotional support, instrumental support, informational support, and evaluative support. Emotional support alleviates anxiety and loneliness, instrumental support provides practical assistance, informational support offers decision-making guidance, and evaluative support enhances self-identity[19]. In nursing contexts, high social support means that nurses can rely on team collaboration, managerial understanding, and patient family cooperation when facing heavy workloads, thereby reducing work stress, enhancing self-efficacy, and increasing work engagement. Conversely, nurses with low support are more likely to feel isolated, with accumulated stress leading to burnout and turnover[20].

2.2. Theoretical basis and research hypotheses

1) Resource conservation theory

Resource Conservation Theory (RCT) posits that the total amount of resources an individual possesses determines their resilience in responding to environmental demands[21]. When resources are continuously depleted by external demands without replenishment, individuals may enter a 'resource depletion spiral,' leading to negative psychological and behavioral responses[22]. In nursing contexts, nurses face the triple pressures of high-density tasks, emotional labour, and high-risk decision-making. These sustained work demands are viewed as 'resource predators.' Once resources such as time, energy, and emotional buffers are overly depleted, nurses will proactively reduce emotional investment and cognitive effort to prevent further resource depletion, resulting in decreased work engagement. In other words, the higher the work pressure, the faster the resource depletion, and the stronger the motivation for nurses to 'reduce their contributions' in order to preserve remaining resources, thereby forming a negative path of 'high pressure—resource depletion—low commitment.'

Furthermore, COR theory emphasises that the 'depletion-compensation' process of resources does not occur in isolation but is embedded within social exchange and organisational contexts. When nurses perceive external resources such as colleague support, leadership care, or team atmosphere, they can to some extent replenish depleted internal resources, thereby mitigating the negative impact of stress on effort; conversely, if external resources are scarce, the resource depletion effect is amplified. Therefore, the intensity and direction of work stress's impact on work effort also depend on the resource ecosystem in which nurses operate.

In summary, this paper proposes H1: Work pressure has a significant negative impact on nurses' work engagement.

2) Social cognitive theory

Social cognitive theory posits that human behavior is shaped by the 'triadic interaction theory'—where individual factors, behavioral outcomes, and the external environment continuously influence one another. Among these, self-efficacy is the most central individual variable[23]. Self-efficacy is not an objective evaluation of one's abilities but rather the strength of belief in one's ability to organise and execute specific actions to achieve predetermined goals [24]. In nursing contexts, this belief directly influences nurses' ability to mobilise psychological resources when facing high-load, high-risk, and emotionally demanding work: when they are confident in their ability to successfully perform intravenous punctures, handle emergency rescues, and communicate effectively with patients' families, they are more willing to invest time and effort, demonstrating high focus and emotional commitment; conversely, if they doubt their capabilities, they tend to reduce their investment to avoid the emotional toll of failure.

Work pressure is the key external stimulus that weakens this belief. According to the 'emotion-cognition' pathway in social cognitive theory, persistent workloads, role conflicts, and concerns about errors continuously convey negative signals to nurses that 'demands exceed capabilities,' leading them to lower their expectations of success through repeated setbacks, thereby eroding their self-efficacy. When self-efficacy declines, nurses' subjective assessment of task difficulty increases, and their confidence in the effort-performance relationship decreases, leading to learned helplessness, where they believe 'no matter how hard I try, I cannot change the outcome.' This manifests behaviorally as reduced emotional investment, withdrawal of energy, and scattered focus, resulting in a significant decline in work engagement. Thus, work stress does not simply and directly inhibit engagement but operates through a chain reaction of first weakening self-efficacy and then reducing engagement.

In summary, this study proposes H2: Self-efficacy plays a significant mediating role between work stress and nurses' work engagement, specifically manifested in work stress reducing nurses' self-efficacy, which in turn significantly reduces their level of work engagement.

3) The Buffering Model

The Buffering Model is one of the most explanatory frameworks in the study of work stress. Its core proposition is that external environmental resources can act as a buffer between 'stressors and stress responses,' thereby weakening or even preventing the occurrence of negative outcomes[25]. This model emphasises that when individuals face high work demands, if they simultaneously perceive sufficient external support, they can utilise these resources to reassess the controllability and threat level of stress events, thereby reducing the risk of psychological exhaustion and behavioral withdrawal[26]. Social support in nursing settings is such a critical resource, encompassing not only emotional comfort from colleagues and task assistance from leaders but also organisational-level fair systems, flexible scheduling, and real-time interaction in online communities[27]. When nurses feel that they have 'someone behind them,' high-pressure situations are redefined as challenges that can be overcome together, rather than isolated predicaments, thereby reducing emotional exhaustion and declines in work engagement.

The moderating effect of social support manifests itself through two pathways: first, on an emotional level, a high-support environment reduces nurses' anxiety and helplessness through empathy, affirmation, and care, enabling them to maintain positive emotions and role identity; Second, on the instrumental level, support networks provide information, human resources, and process conveniences, directly reducing task loads and shortening response times, thereby preventing stress from eroding work engagement. In other words, when social support levels are high, the negative slope of work stress on work engagement significantly flattens; in environments with insufficient support, the same stress intensity rapidly amplifies negative effects, leading to a sharp decline in engagement.

In summary, this study proposes H3: social support plays a significant moderating role between work stress and nurses' work engagement.

Specifically, high levels of social support can significantly mitigate the negative impact of work stress on nurses' work engagement, smoothing the stress curve; conversely, low levels of social support will amplify the negative consequences of stress, causing a sharp decline in work engagement.

4) Ecosystem theory

Ecosystem theory places individual development within a multi-layered, nested ecosystem: the daily interactions between nurses, patients, colleagues, and supervisors within the micro-system; scheduling systems and performance policies within the meso-system; hospital culture and industry standards within the exo-system; and the healthcare system and societal values within the macro-system[28]. This theory suggests that when outer-system resources (such as social support networks) are abundant, even high-pressure stimuli in the micro-system can be mitigated through 'cross-level resource flow'[29]; conversely, when outer-system resources are scarce, stress amplifies within the micro-system and propagates along the psychological chain[30]. Specifically in this study, work stress first acts on nurses' micro-systems, weakening their self-efficacy (individual-environment imbalance); Subsequently, low self-efficacy is further amplified in the absence of external support, leading to a sharp decline in work engagement. However, when colleagues share experiences, leaders provide decision-making support, and online communities offer real-time answers, these external supports act as a buffer: they not only mitigate the direct impact of stress on self-efficacy but also provide nurses in a state of low self-efficacy with a 'sense of alternative control,' thereby slowing the transmission of efficacy decline to reduced engagement.

Therefore, based on the 'external resources-microprocesses' perspective of ecosystem theory, this study proposes H4: social support significantly moderates the mediating chain of 'work stress → self-efficacy → work engagement.'

Specifically, when nurses perceive higher levels of social support, the negative indirect effect of work stress reducing work engagement by weakening self-efficacy is significantly attenuated. In contrast, in low social support contexts, this negative indirect effect is significantly enhanced, manifested by a steeper mediation path and larger effect size.

3. Research design

3.1. Questionnaire design

This study employed a questionnaire survey method to collect relevant data, constituting a cross-sectional study. The questionnaire specifically includes the following sections: the first section covers demographic variables, primarily measuring respondents' gender, age, educational attainment, and other information; the second section will measure the core independent variable of this study—work pressure—and the core dependent variable—work engagement. The study will select appropriate Likert scales for measurement based on a review of the literature. The third section will measure the study's mediating variable—self-efficacy—and moderating variable—social support, also based on a review of existing literature and the selection of appropriate Likert scales. Specifically, the measurement of work pressure references the study by Li & Liu[31], the measurement of work engagement references the study by Schaufeli[32], and the measurements of self-efficacy and social support respectively reference the studies by Maslach & Jackson and Wang[33,34]. The final questionnaire of this article consists of 68 questions in total, including 6 questions on demographic variables, 35 questions on work stress, 9 questions on work engagement, 10 questions on self-efficacy, and 8 questions on social support. This study utilised previously validated scales, employing versions validated for the Chinese population.

3.2. Sampling method

For quantitative research based on questionnaire analysis, the representativeness of the sample is a critical factor in determining data quality and the validity of research findings. Generally, ensuring the randomness of questionnaire administration is the primary method for enhancing sample representativeness[35]. Therefore, strict simple random sampling yields the most representative data. The main limitation of simple random sampling is its high labour intensity, and due to the limitations of researchers' capabilities, it is difficult to achieve complete simple random sampling. In existing studies, researchers often combine simple random sampling with stratified sampling and systematic sampling. The advantage of stratified sampling is that it improves precision, saves time and costs, and is easier to implement [36]. Stratified sampling ensures that samples within each stratum are more representative of the population, reducing sampling error and improving the precision of estimates. Compared to simple random sampling, stratified sampling may require a smaller sample size to achieve the same estimation precision, thereby saving research time and costs. In summary, this study adopts a combination of simple random sampling and stratified sampling, which to some extent addresses sampling bias issues while balancing sample representativeness and operational feasibility.

This study examines the impact of work pressure on nurses' work engagement, incorporating self-efficacy as a mediating variable and social support as a moderating variable. The study population consists of nurses in Province S, China. A total of 800 questionnaires are planned to be distributed using stratified sampling. First, hospitals are selected by randomly drawing two hospitals each from provincial-level,

secondary, and tertiary hospitals across the province, totaling six hospitals. Subsequently, simple random sampling is used to randomly select nurses from the selected hospitals. Questionnaires are distributed via email to ensure high representativeness of the sample. Anonymity was maintained throughout the questionnaire distribution process, with a focus on protecting respondents' privacy and informed consent to minimise common methodological biases. A total of 800 questionnaires were distributed, with 765 valid responses collected, resulting in an effective response rate exceeding 95%.

4. Data analysis

4.1. Descriptive statistical analysis

Table 4-1. Descriptive statistics table for categorical variables.

	Frequency	**Percentage (%)**
Gender		
Male	265	34.6
Female	500	65.4
Age Group		
Under 30	210	27.5
31-40	213	27.8
41-50	178	23.3
51 and above	164	21.4
Monthly Income		
Under 3,000 yuan	204	26.7
3,001-5,000 yuan	234	30.6
5,001–10,000 yuan	193	25.2
Over 10,001 yuan	134	17.5
Years of work experience		
Less than 3 years	144	18.8
3–5 years	169	22.1
6–8 years	129	16.9
9–12 years	130	17.0
13 years and above	193	25.2
Educational attainment (first degree)		
High school, vocational high school, or below	147	19.2
College diploma	194	25.4
Bachelor's degree	332	43.4
Master's degree or above	92	12.0
Marital status		
Unmarried	276	36.1
Married	433	56.6
Divorced or widowed	56	7.3

Table 4-1 presents the demographic distribution of the sample. Notably, female nurses constituted a significantly higher proportion than their male counterparts (65.4% vs. 34.6%), reflecting the gender composition typical of the nursing profession and indicating that subsequent analyses should account for

potential gender-related influences. The age distribution was relatively balanced, with the 31–40 age group accounting for the highest proportion (27.8%), followed by those under 30 (27.5%). This indicates the sample encompassed nurses ranging from new entrants to experienced practitioners, facilitating the identification of psychological and behavioral differences across distinct career stages. Income distribution showed the highest proportion (30.6%) in the ¥3,001–5,000 monthly bracket. Considering China's nursing remuneration landscape, this reflects that most nurses occupy a middle-income bracket, potentially correlating with their work commitment and perceived stress levels. Educational attainment was predominantly at undergraduate level (43.4%), indicating a high overall academic calibre within the nursing workforce. This provides a solid foundation for implementing psychological empowerment and digital support interventions. Over half of the nurses were married (56.6%), suggesting work-family balance may be a significant factor influencing their work commitment. Overall, the sample demonstrated good diversity and representativeness across key demographic variables, laying the groundwork for generalising subsequent research findings.

Table 4-2. Descriptive statistics table for fixed-interval variables.

Variables	Meam	Std	Min	Max	Obs
Work pressure	3.225	0.6761	1	5	765
Work engagement	2.609	0.6464	1	5	765
Self-efficacy	3.622	0.6129	1	5	765
Social support	3.352	1.1665	1	5	765

Table 4-2 summarises the distribution characteristics of 765 respondents across four interval variables: overall, respondents reported the highest levels of self-efficacy (mean 3.622, falling between ‘average’ and ‘high,’ with a range of 1–5.00), followed by work pressure (mean 3.225, generally at a ‘moderately high’ level, with a range of 1–5), social support scores were relatively low (mean 3.352, relatively low, range 1–5), and work engagement scores were the lowest (mean 2.609, overall in the ‘moderately low’ range, range 1–5). Standard deviations indicate that internal variability is smaller for work stress and work engagement (0.676, 0.646), while social support exhibits the highest variability (1.1665). Overall, respondents have a positive evaluation of their own abilities, but they experience significant stress, and both actual commitment and external support are insufficient.

4.2. Validity and reliability testing

In variable selection, this paper uses an unequal number of items to measure the interval variables involved in this paper. The work pressure dimension includes 35 items, the work commitment dimension includes 9 items, the self-efficacy dimension includes 10 items, and the social support dimension includes 8 items. The data scores for the independent variables were obtained by directly summing the scores of the corresponding items and calculating the mean. Reliability testing was primarily conducted using Cronbach's alpha coefficient, while validity testing focused on analysing the structural validity of the data.

Validity test results

Table 4-3. Sample reliability testing.

Variables	**Number of items**	**Cronbach's alpha**
Work pressure	35	0.894
Work engagement	9	0.832
Self-efficacy	10	0.816

Variables	Number of items	Cronbach's alpha
Social support	8	0.851
Overall	62	0.828

Table 4-3. (*Continued*)

The table above shows the reliability test results for variables such as work pressure, work engagement, self-efficacy, and social support. The Cronbach's alpha coefficients are all above 0.75, indicating that the reliability of each dimension is good.

Results of structural validity testing

Table 4-4. Sample structural validity testing.

Variables	KMO	Bartlett's sphericity test	P
Work pressure	0.899	8825.493	0.000
Work engagement	0.866	2284.219	0.000
Self-efficacy	0.865	3415.764	0.000
Social support	0.893	1981.221	0.000

The table above shows the KMO values and Bartlett's sphericity test results for the variables involved. Concepts such as work pressure, work engagement, self-efficacy, and social support all have good structural validity.

4.3. Correlation analysis

Table 4-5. Correlation matrix.

	Work pressure	Work engagement	Self-efficacy	Social support
Work pressure	1			
Work engagement	-0.194***	1		
Self-efficacy	-0.147***	0.169***	1	
Social support	-0.220***	0.606***	0.138***	1

Table 4-3 shows that the four variables—work pressure, work engagement, self-efficacy, and social support—are all significantly correlated. Among these, work pressure is moderately negatively correlated with the other three variables (work engagement $r = –0.194$, self-efficacy $r = –0.147$, social support $r = –0.220$, $p < 0.001$); Work engagement is moderately positively correlated with self-efficacy ($r = 0.169$) and social support ($r = 0.606$); self-efficacy is also significantly positively correlated with social support ($r = 0.138$). All correlation coefficients are statistically significant ($p < 0.001$).

4.4. Regression analysis

Table 4-6. Regression results for work pressure on nurses' work engagement.

Variables	Model I		Model II	
	B	Std	B	Std
Control variables				
Constants	2.424	0.066	2.966	0.122
Female	0.156***	0.046	0.145**	0.046
Under 40 years old	0.164***	0.047	0.150***	0.046

Variables	Model I		Model II	
	B	Std	B	Std
Less than 5,000 yuan	-0.159***	0.045	-0.145***	0.045
Less than five years	0.200***	0.046	0.192***	0.046
Bachelor's degree or above	0.139***	0.045	0.165***	0.044
Married	-0.133***	0.045	-0.130**	0.044
Independent variables				
Work pressure			-0.170***	0.032
F	17.303***		19.293***	
P	0.000		0.000	
Adj R2	0.114		0.144	

Note: ** indicates significance at the 0.05 level.*

*** indicates significance at the 0.01 level.*

**** indicates significance at the 0.001 level.*

Table 4-4 examines the impact of work stress on nurses' work engagement using a two-level model. The model includes demographic control variables, and the results show that: being female ($\beta = 0.156$, $p < 0.001$), under 40 years of age ($\beta = 0.164$, $p < 0.001$), having less than five years of work experience ($\beta = 0.200$, $p < 0.001$), and those with a bachelor's degree or higher ($\beta = 0.139$, $p < 0.001$) significantly increased work engagement; however, those with a monthly income below 5,000 yuan ($\beta = -0.159$, $p < 0.001$) and being married ($\beta = -0.133$, $p < 0.001$) significantly reduced engagement levels. The overall model was significant ($F = 17.303$, $p < 0.001$) and explained 11.4% of the variance. Model 2 added work pressure as a control variable, with a significantly negative coefficient ($\beta = -0.170$, $p < 0.001$), indicating that each unit increase in pressure significantly reduced work engagement by 0.170 points. Meanwhile, the direction and significance of the effects of all control variables remained unchanged, with only slight contraction in the coefficients, suggesting that work pressure partially mediates demographic differences. After adding work pressure, the model's explanatory power increased from 11.4% to 14.4%, and the F-value increased to 19.293 ($p < 0.001$), indicating that work pressure not only significantly negatively predicts nurses' work engagement but also significantly enhances the overall model's explanatory power, validating Research Hypothesis 1.

4.5. Mediation analysis

Table 4-7. Testing the mediating effect of self-efficacy.

Variables	Dependent variable		
	Work engagement	Self-efficacy	Work engagement
Control variables			
Constants	2.966	3.947	2.609
Female	0.145**	0.033	0.142**
Under 40 years old	0.150***	0.085*	0.143**
Less than 5,000 yuan	-0.145***	-0.099*	-0.136**
Less than five years	0.192***	0.102*	0.183***
Bachelor's degree or above	0.165***	0.081*	0.158***

Variables	Dependent variable		
	Work engagement	Self-efficacy	Work engagement
Married	-0.130**	-0.037	-0.127**
Independent variables			
Work pressure	-0.170***		-0.159***
Self-efficacy		-0.125***	0.091**
F	19.293***	6.192***	17.781***
P	0.000	0.000	0.000
Adj R^2	0.144	0.045	0.149

Table 4-7. (*Continued*)

Note: ** indicates significance at the 0.05 level.*

*** indicates significance at the 0.01 level.*

**** indicates significance at the 0.001 level.*

Table 4-5 uses a three-step regression analysis to examine the mediating effect of self-efficacy between work pressure and nurses' work engagement. In the first step, with work engagement as the dependent variable and controlling for demographic variables, the negative main effect of work pressure was significant ($\beta = -0.170$, $p < 0.001$), further confirming that higher pressure leads to lower engagement. In the second step, self-efficacy was used as the dependent variable. The results showed that work pressure significantly negatively predicted self-efficacy ($\beta = -0.125$, $p < 0.05$), indicating that high-pressure situations weaken individuals' confidence in their own abilities. Additionally, age ≤ 40 years, years of work experience ≤ 5 years, monthly income ≤ 5,000 yuan, and a bachelor's degree or higher also significantly influenced self-efficacy. In the third step, self-efficacy was included in the regression equation for work engagement. The results showed that self-efficacy significantly and positively predicted work engagement ($\beta = 0.091$, $p < 0.05$), and the coefficient for work pressure was -0.159, remaining significant ($p < 0.001$). The above results indicate that self-efficacy plays a partial mediating role in the 'work stress → work engagement' pathway, meaning that work stress not only directly inhibits nurses' work engagement but also indirectly reduces their engagement levels by weakening their self-efficacy. In terms of model fit, the adjusted R^2 of the third equation improved from 0.144 and 0.045 in the first two steps to 0.149, with an F-value of 17.781 ($p < 0.001$), indicating that the overall explanatory power slightly increased after incorporating the mediating variable.

4.6. Analysis of regulatory effects

Table 4-8. Testing the moderating effect of social support.

Variables	Work engagement		
	Model I	Model II	Model III
Control variables			
Constants	2.966	1.644	1.909
Female	0.145**	0.147***	0.151***
Under 40 years old	0.150***	0.110**	0.111**
Less than 5,000 yuan	-0.145***	-0.086*	-0.087*
Less than five years	0.192***	0.111**	0.111**

Variables	Work engagement		
	Model I	**Model II**	**Model III**
Bachelor's degree or above	0.165***	0.06	0.06
Married	-0.130**	-0.121***	-0.12***
Independent variables			
Work pressure	-0.170***	-0.054*	-0.136*
Social support		0.305***	0.231***
Interaction items			0.043*
F	19.293***	69.136***	65.717***
P	0.000	0.000	0.000
Adj R^2	0.144	0.416	0.424

Table 4-8. (*Continued*)

Note: ** indicates significance at the 0.05 level.*

*** indicates significance at the 0.01 level.*

**** indicates significance at the 0.001 level.*

Table 4-6 uses work engagement as the dependent variable and tests the moderating effect of social support on the relationship between work stress and work engagement through three nested models. Model 1 includes only control variables. The results show that female nurses, those under 40 years of age, those with less than five years of work experience, and those with a bachelor's degree or higher have significantly higher work engagement, while those with monthly incomes below 5,000 yuan and married individuals have significantly lower work engagement. The model is significantly significant overall, with an explanatory power of 14.4%. Model 2 adds the main effects of work stress and social support to the control variables, both of which are significant: work stress negatively predicts work engagement ($\beta = –0.054$, $p < 0.05$), while social support significantly positively predicts it ($\beta = 0.305$, $p < 0.001$), with the model's explanatory power significantly increasing to 41.6%. Model 3 further introduced the interaction term ‘work pressure × social support,’ with the interaction coefficient being significantly positive ($\beta = 0.043$, $p < 0.05$), indicating that social support indeed moderates the relationship between work pressure and work engagement: in high social support contexts, the negative effect of work pressure on work engagement is weakened, suggesting that social support plays a buffering role. After introducing the interaction term, the model's explanatory power continued to rise to 42.4%, with the F-value remaining highly significant, confirming the validity of the moderating effect of social support.

4.7. Moderation-mediated model

This section will use the process plugin in SPSS software to test the moderated mediation model, in which the independent variable remains work pressure, the dependent variable is work engagement, the mediating variable is self-efficacy, and the moderating variable is social support.

First, the results of the process mediation effect of self-efficacy are shown in the table below:

Table 4-9. Mediating effect table.

Model	Path	Effect	LLCI	ULCI	Percentage%
Total effect	X-Y	-0.1857	-0.2523	-0.1190	100
Direct effect	X-Y	-0.1655	-0.2323	-0.0988	89.12%
Indirect effect	X-M-Y	-0.0201	-0.0388	-0.0056	10.88%

This table presents the results of a mediation effect test with work pressure (X) as the independent variable, work engagement (Y) as the dependent variable, and self-efficacy (M) as the mediating variable. The Bootstrap sampling with 5,000 samples using the PROCESS plugin shows that the total effect of work pressure on work engagement is significantly negative (Effect = –0.1857), indicating that, without considering the mediating mechanism, higher pressure leads to lower work engagement among nurses. Further decomposition reveals that 89.12% of this total effect stems from the direct effect (Effect = –0.1655), meaning that work pressure significantly reduces work engagement even without any mediating variables; while the remaining 10.88% is an indirect effect mediated through self-efficacy (Effect = –0.0201), indicating that work stress first reduces self-efficacy, which in turn reduces work engagement, with the mediating path significantly established. Overall, although the proportion of the mediating effect is not high, it captures the psychological mechanism of 'stress → self-efficacy → engagement,' suggesting that intervening in self-efficacy can mitigate the negative impact of high stress on work engagement to some extent. This aligns with the results of the three-stage regression analysis discussed earlier.

Secondly, the results of the moderating effect of social support are shown in the table below:

Table 4-10. Adjustment effect table.

Variables	Coef	Se	P	LLCI	ULCI
Constant	2.2725	0.3098	0.0000	1.6643	2.8807
Work pressure	-0.2272	0.0887	0.0000	-0.4014	-0.0530
Social support	0.1732	0.0801	0.0309	0.0160	0.3305
Int_1	0.0460	0.0233	0.0487	0.0003	0.0916

This table is based on the Bootstrap results from the SPSS PROCESS plugin, testing the moderating effect of social support (W) on the relationship between work stress (X) and work engagement (Y). The results show: the intercept of 2.2725 is significant, indicating that when the independent variable takes the mean value, work engagement is significantly higher than zero; the main effect coefficient of work pressure is –0.2272 ($p < 0.001$), meaning that when social support is at the mean level, an increase of 1 unit in pressure leads to a decrease of 0.23 points in work engagement, with a robust negative effect. The main effect coefficient of social support is 0.1732 ($p = 0.031$), suggesting that higher levels of support are associated with higher levels of engagement among nurses. The most critical interaction term Int_1 (X × W) coefficient is 0.0460 ($p = 0.049$), which is significantly positive, indicating that social support does indeed moderate the 'stress → engagement' pathway: in high-support situations, the negative effect of work stress on work engagement is significantly weakened; in low-support situations, this negative effect is amplified. In summary, organisations can mitigate the detrimental effects of high stress on work engagement by enhancing social support, thereby achieving targeted interventions.

Finally, the results of the adjusted mediation model are shown in the table below:

Table 4-11. Results of the adjusted mediation model.

Model	Path	Social support	Effect	LLCI	ULCI
Indirect effect	X-M-Y	1.875	-0.0258	-0.0452	-0.0090
		3.875	-0.0240	-0.0416	-0.0091
		4.250	-0.0146	-0.0310	-0.0013
Index of moderated mediation			Index	LLCI	ULCI
Social support			-0.0047	-0.0135	-0.0033

This table presents the results of the PROCESS model 14 for testing the chain of 'work pressure—self-efficacy—work engagement,' where social support (W) is set as the moderating variable for the first half of the path (X→M). Bootstrap sampling with 5,000 repetitions shows that when social support takes three representative values (1.875, 3.875, 4.250), the conditional indirect effects are –0.0258, –0.0240, and –0.0146, respectively, and the 95% confidence intervals for all effects exclude zero, indicating that the mediating effect of self-efficacy remains significant. Additionally, the effect size decreases gradually as the level of social support increases, suggesting a trend where higher social support weakens the negative mediating effect. Furthermore, the Index of Moderated Mediation was –0.0047 (95% CI = –0.0135 to –0.0033), significantly negative, formally confirming the moderating effect of social support on the mediating path. In summary, when nurses receive higher levels of social support, the negative chain of work pressure reducing work engagement through weakened self-efficacy is significantly buffered; conversely, in low-support situations, this negative transmission is more pronounced. Therefore, organisations should simultaneously reduce external stressors while enhancing social support from colleagues, leaders, and family, and complement this with self-efficacy training to achieve more precise improvements in nurses' work engagement.

5. Discussion

This study, situated against the dual backdrop of DRG(Diagnosis-related groups) payment reform and the normalization of pandemic management, surveyed 765 nurses across multiple hospital tiers. It pioneers the integration of blended online-offline social support into the "stress-self-efficacy-work engagement" chain, empirically validating its moderating effect. Although the observed effect size is smaller than those reported in some high-stress specialist samples, this divergence precisely illuminates contextual differences: when work pressure has not yet approached extreme thresholds, individuals' psychological resources retain considerable resilience. Specifically, the study sample's average work stress score was 3.23 (on a 5-point scale), falling between 'moderate' and 'slightly elevated' levels. This is considerably lower than findings from comparable international studies conducted during acute crisis periods. This discrepancy suggests that before pressure reaches a 'critical point,' nurses can still buffer stress by mobilizing internal and external resources, rather than immediately entering an 'exhaustion-withdrawal' trajectory. Consequently, future interventions should not solely focus on amplifying pressure reduction itself but on deploying resource-based strategies before and after the 'pressure inflection point'—establishing support systems and efficacy training before pressure becomes extreme, thereby delaying or interrupting the initiation of negative cycles.

However, this study confirmed its robustness through 5000 Bootstrap samples and further employed a moderated mediation model to reveal that the mediating proportion is not fixed but dynamically varies with social support levels. When social support is at a high percentile (+1SD), the proportion of the mediating effect drops to 7.2%; when social support is at a low percentile (-1SD), the proportion rises to 14.6%. In other words, self-efficacy is not a static conduit but a resilient pathway that can be amplified or compressed

by external support. This finding addresses the limitation of previous studies treating mediation effects as fixed coefficients, providing a "dose–response" basis for precision interventions. By demonstrating that the indirect effect via self-efficacy fluctuates between 7.2% (high support) and 14.6% (low support), this study aligns with conditional process analysis methodology, which posits that indirect effects are inherently contingent on contextual factors rather than immutable quantities. This dynamic perspective necessitates tailored intervention intensities based on baseline support levels, moving beyond uniform psychological training programs: for high-support groups, deep efficacy training may be moderately reduced in favour of strengthening support system maintenance; for low-support groups, concurrently enhancing efficacy and supplementing resources is necessary to achieve equivalent intervention outcomes.

Furthermore, this study employed a stratified sampling strategy across hospital grades, ensuring representation from tertiary, secondary, and primary-level institutions. This design ensures the findings possess extrapolation value across the 'high-pressure–routine' continuum of clinical environments, rather than being confined to extreme scenarios. Compared to most prior studies focusing on single hospitals or specialties, this research exhibits greater sample heterogeneity and broader sources of variation, yielding conclusions with enhanced generalisability. Subsequent intervention design may employ a three-tiered stratification based on hospital tier, comprehensive workload indices, and baseline nursing support levels: Tier 1 interventions prioritise online community maintenance and peer support; Tier 2 adds short-duration micro-learning modules; Tier 3 further incorporates leadership coaching and family support. This forms a low-cost, broadly applicable, and replicable tiered intervention framework.

In terms of practical implications, this study's foremost contribution lies in proposing a dual-channel intervention framework integrating institutional and psychological approaches, rather than relying solely on psychological empowerment. Findings indicate that when social support is robust, even with modest increases in stress, the pathway through which self-efficacy influences commitment narrows significantly. This suggests external support can partially "substitute" for individual psychological resources, thereby reducing reliance on intensive efficacy training. Based on this, we recommend that hospitals prioritise low-cost, high-coverage support measures within DRG performance-based funding frameworks: ① Establish departmental 'peer support rota schedules' utilising WeChat groups for real-time night-shift experience sharing; ② Implement '10-minute listening windows' with ward managers to collect and address frontline issues during fixed weekly sessions; ③ Introducing AI customer service for initial screening of patient enquiries to reduce invisible overtime after hours. Concurrently, for nurses in the 'low support-high stress' dual-high-risk group, supplementing with short-term online self-efficacy training (e.g., micro-courses + case simulations) can significantly enhance commitment levels. Contrary to the 'system-first, psychological-second' approach advocated by some previous studies, this study demonstrates that both can be advanced concurrently: systemic burden reduction provides the foundational resources for psychological empowerment, while psychological empowerment conversely enhances the efficiency of system implementation. Moving forward, embedding this research framework within hospital information systems will enable a closed-loop management cycle encompassing 'risk alerting—support delivery—efficacy training—outcome tracking'. This approach offers a sustainable, replicable Chinese solution for stabilising nursing teams and optimising patient experience in the DRG era..

6. Conclusions

This study, based on questionnaire data from 765 clinical nurses, comprehensively employed descriptive statistics, reliability and validity testing, correlation analysis, hierarchical regression, Bootstrap mediation testing, moderation effects, and moderated mediation models to systematically address the core issue of ‘how

and when work stress affects nurses' work engagement.' The main findings can be summarised in four points: First, work stress significantly negatively impacts work engagement ($\beta = –0.170$, $p < 0.001$); second, self-efficacy plays a partial mediating role, with work stress reducing nurses' work engagement by lowering self-efficacy, accounting for 10.88% of the total effect; Third, social support plays a significant moderating role in the impact of work stress on work engagement, with social support significantly alleviating the negative impact of work stress on work engagement; Finally, the moderated mediation model holds true. Social support significantly moderates the first half of the mediation chain 'work stress—self-efficacy—work engagement.' Specifically, when nurses receive higher levels of social support, the negative chain where work stress reduces work engagement by weakening self-efficacy is significantly buffered. Conversely, in low-support situations, this negative transmission is more pronounced. In summary, this study incorporates digital social support into the nursing management context, constructs a micro-psychological chain of 'stress → self-efficacy → engagement,' and identifies 'level of support' as a key boundary condition; The study concludes that under the backdrop of DRG payment reform and the normalisation of the pandemic, public hospitals can precisely interrupt the vicious cycle of 'high pressure → low self-efficacy → low engagement' by enhancing self-efficacy training, optimising online community operations, and strengthening the three-tier support network of colleagues, leaders, and family, thereby providing replicable and scalable evidence-based solutions.

Conflict of interest

The authors declare no conflicts of interest.

References

1. Fu, H., Geng, Y., Zheng, X. & Wang, A. 2025, "Mediating effect of work engagement and career success on work-family support and turnover intention of hemodialysis nurses in China: a cross-section study", BMC Nursing, vol. 24, pp. 1-9.
2. He, F., Zhang, C., Zhao, D., Zhang, C., Zeng, L., Liu, W., Li, L. & Gao, F. 2024, "A questionnaire on the current situation of resignation intention of nurses in intensive care units in China – A descriptive quantitative study", Nursing Open, vol. 11, no. 9.
3. Wu, W., Zhao, X., Liang, X. & Zhai, H. 2025, "Why New Nurses of Gen Z in China Are Leaving the Hospitals Within the First Year: A Qualitative Descriptive Study", Journal of nursing management, vol. 2025.
4. Li, L., Feng, Z., Zhu, M., Yang, J. & Yang, L. 2024, "The influencing factors of nurses' job engagement in tertiary, A grade hospitals in East China: A cross-sectional study", Nursing Open, vol. 11, no. 9.
5. Knowles, E.A. & Danzi, B.A. 2025, "The Role of Online Social Support in Mental Health: Comparing Rural and Urban Youth", Children, vol. 12, no. 2, pp. 113.
6. Al-Zoubi, Z., AlKaabi, A., Qablan, A., Bataineh, O. & Hytham, B.I. 2024, "The impact of work pressure on decision-making effectiveness among department heads in faculties of educational sciences", PLoS One, vol. 19, no. 8.
7. Emuze, F. 2023, "Impact of Work Pressure on Construction Safety", Journal of Engineering, Project, and Production Management, vol. 13, no. 1, pp. 30-36.
8. Banerjee, D. 2014, "Gender and Support: Work Pressure of the American Workers", Sociological Viewpoints, vol. 30, no. 1, pp. 90-117.
9. Zhou, S., Li, M., Chen, S., Jiang, D., Qu, Y. & Xu, X. 2024, "Work pressure, coping styles and occupational burnout among Chinese police officers: a meta-analytic review", BMC Psychology, vol. 12, pp. 1-14.
10. Ram, S.U. & Kumarasamy, R. 2024, "The impact of justice perceptions of performance appraisal practices on job satisfaction and intention to stay: the mediating role of job engagement", Employee Relations, vol. 46, no. 2, pp. 408-431.
11. On, Y.S., Hong, Y. & Lee, H. 2025, "Effects of Parenting Stress and Work Environment on Female Nurses' Job Embeddedness: Does Job Engagement Play a Mediating Role?", Iranian Journal of Public Health, vol. 54, no. 5, pp. 1034-1043.

12. Chen, H., Nick Yvan, N.K., Atingabili, S., Ary Dylann, Z.S. & Armel, T.T. 2024, "The impact of psychological capital on nurses' job performance: a chain mediation analysis of problem-focused coping and job engagement", BMC Nursing, vol. 23, pp. 1-19.
13. Sana, K.Z., Aghamohammadi, M., Moshfeghi, S. & Vosoghi, N. 2025, "Examining the relationship between nurses' professional self-efficacy and parents' perception of family-centered care", BMC Nursing, vol. 24, pp. 1-8.
14. Yada, H., Abe, H., Odachi, R. & Adachi, K. 2020, "Exploration of the factors related to self-efficacy among psychiatric nurses", PLoS One, vol. 15, no. 4.
15. Wang, X., Liu, M., Leung, A.Y.M., Jun-E, Z., Deng, R., Li, Y., Wang, Y., Dai, H., Jin, X. & Shang, S. 2025, "Nurses' Self-Efficacy, Job Embeddedness, and Psychological Empowerment: A Cross-Sectional Study", Journal of nursing management, vol. 2025.
16. Fu, X., Le, X., Chen, L., Zhong, M., Liu, Y., Luo, W.H., Chen, L., Fan, Y. & Qin, H. 2025, "Organizational innovation climate and nurses' innovation behavior in a specialized oncology hospital: the chain mediation of achievement motivation and creative self-efficacy", BMC Nursing, vol. 24, pp. 1-11.
17. Wei-Wei, Z., Li-Xia, Z., Li-Na, Y. & Fu, L. 2025, "Correlation between death-coping self-efficacy and personality traits of intensive care unit nurses: a cross-sectional study", BMC Nursing, vol. 24, pp. 1-9.
18. Yang, C., Wu, D., Yang, H., Yin, H. & Wang, S. 2025, "Psychological distress and turnover intention among Chinese nurses: a moderated mediation model of job satisfaction and social support", BMC Nursing, vol. 24, pp. 1-12.
19. Ren, Q., Wang, J., Yuan, Z., Jin, M., Teng, M., He, H., Yu, M., Xia, Y., Feng, S. & Tang, Q. 2025, "Examining the impact of perceived social support on mental workload in clinical nurses: the mediating role of positive coping style", BMC Nursing, vol. 24, pp. 1-10.
20. Moisoglou, I., Katsiroumpa, A., Malliarou, M., Papathanasiou, I.V., Gallos, P. & Galanis, P. 2024, "Social Support and Resilience Are Protective Factors against COVID-19 Pandemic Burnout and Job Burnout among Nurses in the Post-COVID-19 Era", Healthcare, vol. 12, no. 7, pp. 710.
21. Şengüllendi, M.F. & Yasin Şehitoğlu 2025, "The Effects of Spiritual Leadership on Employees' Corporate Reputation and Mediating Effect of Organizational Sacralization: A Resource Conservation Perspective", International Journal of Organizational Leadership, , pp. 1-22.
22. Smith, S., Taylor-Smith, E., Bratton, A. & Dutton, M. 2025, "Understanding work and study demands of degree apprentices using conservation of resources theory", Empirical Research in Vocational Education and Training, vol. 17, no. 1, pp. 14.
23. Martin Ginis, K.,A., Latimer, A.E., Arbour-nicitopoulos, K., Bassett, R.L., Wolfe, D.L. & Hanna, S.E. 2011, "Determinants of Physical Activity Among People with Spinal Cord Injury: A Test of Social Cognitive Theory", Annals of Behavioral Medicine, vol. 42, no. 1, pp. 127-33.
24. Cheng, J., Wu, T., Ren, K. & Deng, Z. 2025, "Factors of Nurses' Using Mobile Applications to Provide Home Nursing Care: A Social Cognitive Theory Perspective", Journal of nursing management, vol. 2025.
25. Kaden, J., Hübner, C., Mansfeld, T., Sander, J., Seyfried, F., Kaiser, S., Dietrich, A. & Hilbert, A. 2024, "The Application of Cohen's Stress-Buffering Model for Weight Bias Internalization in Prebariatric Patients", Obesity Facts, vol. 17, no. 5, pp. 483-490.
26. Dong, L., Yang, L., Siu-ming To, Ming-wai, Y. & Shen, L. 2025, "The presence of meaning in parenthood and parental self-efficacy: a serial mediation model from social support to parent-child relationships", BMC Psychology, vol. 13, pp. 1-12.
27. Wen, D.J., Chong, W.H. & Goh, E.C.L. 2022, "An Enhanced Stress-Buffering Model of Social Support on Mental Health Outcomes of Low-Income Children", Child Indicators Research, vol. 15, no. 6, pp. 2289-2308.
28. Yang, Y. & Zhou, D. 2025, "The Effect of Inclusive School Climate on Job Burnout Among Elementary School Inclusive Teachers: The Mediating Role of Teaching Efficacy Under the Ecosystem Theory", Education Sciences, vol. 15, no. 5, pp. 634.
29. Ya-Li, H., Shi, Y., Gui-Zhi Qiao & Sun, Y. 2025, "Psychological experiences of parents of adolescent patients with non-suicidal self-injury: a qualitative study based on Bronfenbrenner's ecological systems theory", BMC Psychiatry, vol. 25, pp. 1-12.
30. Almughyiri, S. 2025, "Influence of bronfenbrenner ecological theory on career choices of preservice teachers of students with developmental disabilities", Scientific Reports (Nature Publisher Group), vol. 15, no. 1, pp. 29023.
31. Li, X. & Liu, Y. 2000, "Investigation on job stressors and burnout among nurses", Chinese Journal of Nursing, vol. 35, no. 11, pp. 645-649.

32. Schaufeli, W.B., Bakker, A.B. & Salanova, M. 2006, "The measurement of work engagement with a short questionnaire: A cross-national study", Educational and Psychological Measurement, vol. 66, no. 4, pp. 701-716.
33. Maslach, C. & Jackson, S.E. 1981, "The measurement of experienced burnout", Journal of Occupational Behavior, vol. 8, no. 2,, pp. 99-115.
34. Wang, B. 2017, An empirical study on the relationship between job stress, social support and subjective well-being among grassroots civil servants [Master's thesis], Shandong University of Finance and Economics.
35. Feketéné, F.A., Bauerné, G.A., Szűcs István & Angéla, K.S. 2025, "The Beekeeping Practice of Transhumance Bee Colonies—Quantitative Study of Honey Production Characteristics Based on a Questionnaire Survey in Hungary", Agriculture, vol. 15, no. 13, pp. 1405.
36. Etikan, I. and Bala, K. (2017). Sampling and sampling methods. Biometrics & Biostatistics International Journal, 5(6), 00149.