

Research Hotspots and Evolutionary Trends of Work Engagement in China: A Knowledge Graph Analysis Based on CiteSpace

Huiming Li^{1*}

¹ College of Systems Engineering, National University of Defense Technology, Changsha, China

Email Address

a_chen2022@163.com (Huiming Li)

*Correspondence: a_chen2022@163.com

Received: 30 August 2025; **Accepted:** 9 September 2025; **Published:** 16 September 2025

Abstract:

This study systematically analyzes the hotspots and evolutionary trends of work engagement research in China using 520 core journal articles indexed in the China National Knowledge Infrastructure (CNKI) database from 2006 to 2025. Employing CiteSpace visualization tools, methods such as keyword co-occurrence, cluster analysis, and timeline mapping were applied. The findings reveal that domestic research on work engagement is characterized by “occupational group specificity, deepening psychological mechanisms, and a dual focus on positive and negative effects.” Hotspot themes encompass four major domains: occupation-specific studies, psychological resources and depletion mechanisms, organizational context and behavioral outcomes, and methodological frameworks. The research evolution is divided into three stages: the embryonic stage (2006-2009), the development stage (2010-2017), and the deepening stage (2018-2025). Theoretically, research has shifted from introducing foreign concepts to localized innovation; methodologically, it has progressed from qualitative descriptions to diversified empirical approaches. By mapping the knowledge graph, this study clearly presents the hotspots, evolutionary trajectory, and development trends of work engagement research in China, providing comprehensive and systematic insights for future theoretical exploration and management practice.

Keywords:

Work Engagement, Citespace, Knowledge Graph, Research Hotspots, Evolutionary Trends

1. Introduction

Work engagement, defined as a state of vigor, dedication, and absorption in work (Kahn, 1990)[1], holds significant theoretical and practical value for enhancing organizational effectiveness and employee well-being. Since Kahn introduced the concept, research has evolved from viewing engagement merely as “the antithesis of

burnout” to establishing a multidimensional framework encompassing psychological states, behavioral manifestations, and dynamic mechanisms. Against the backdrop of China’s economic transformation and high-quality development, research on work engagement offers practical insights for addressing talent efficiency bottlenecks and optimizing organizational management.

To clarify the knowledge structure and evolutionary logic of domestic work engagement research, this study utilizes CiteSpace’s scientific knowledge mapping technology. By analyzing keyword co-occurrence networks, visualizing thematic evolution via timelines, and detecting keyword bursts, this research maps the intellectual landscape of the field. This approach not only provides a reference for work engagement studies but also informs the development of theoretical frameworks aligned with Chinese cultural and workplace characteristics, guiding human resource management practices.

2. Data Source and Methodology

2.1. Data Source

This study utilized the China National Knowledge Infrastructure (CNKI) database as the retrieval platform, with “work engagement” as the search term. Source categories were restricted to CSSCI, PKU Core, CSCD, AMI, WJCI, and EI-indexed publications. The search, conducted on July 24, 2025, initially yielded 622 academic journal articles. Following manual screening to exclude 102 irrelevant publications, 520 articles spanning 2006 to 2025 were retained as the final dataset.

2.2. Methodology

CiteSpace—a visualization software designed to analyze latent knowledge in scientific literature—was employed for bibliometric analysis (Version 6.3.R1). The software generated knowledge maps including keyword co-occurrence networks, keyword clustering diagrams, and keyword timeline clusters. Integrated with annual publication trend analysis, these visualizations enabled statistical examination and graphical representation of research hotspots and evolutionary trends in Chinese work engagement literature from 2006 to 2025, thereby mapping the intellectual landscape of this research domain.

3. Knowledge Graph of Work Engagement Research

3.1. Statistical Analysis of Annual Publication Volume on Work Engagement

Publication volume serves as an indicator of academic attention toward a research field, with higher numbers reflecting greater research activity.



Figure 1. Annual publication volume on work engagement in China (2006-2025).

Statistical analysis of work engagement publications from 2006 to 2025 (Figure 1) reveals that domestic research commenced relatively late, with minimal publications prior to 2009. A steady increase occurred from 2010 to 2017, signaling growing scholarly interest, followed by stabilization after 2018—indicating maturation of the research domain.

3.2. Keyword Co-occurrence Analysis of Work Engagement

CiteSpace's co-occurrence function visualized keywords in domestic work engagement research over two decades, generating keyword frequency maps and cluster diagrams (Figure 2) to identify hotspot themes.

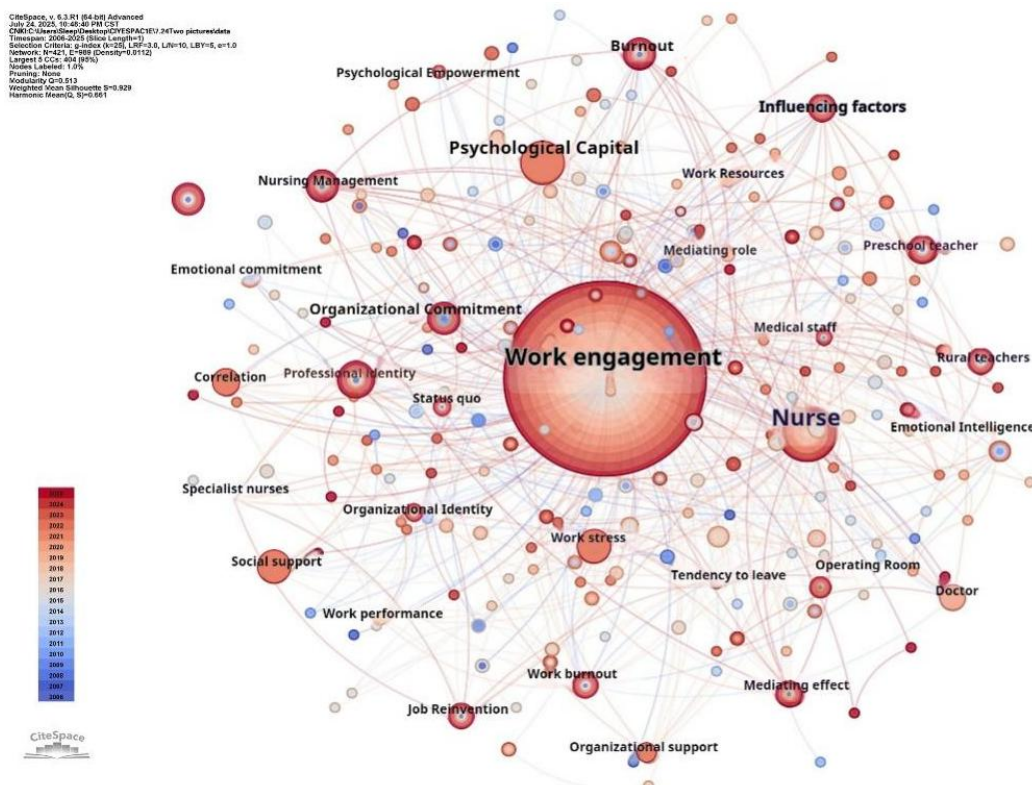


Figure 2. Keyword co-occurrence map of domestic work engagement research.

Table 1. Top 20 high-frequency keywords in domestic work engagement research.

Number	Keyword	Freq.	Number	Keyword	Freq.
1	Work engagement	474	11	Job crafting	12
2	Nurses	60	12	Emotional intelligence	10
3	Psychological capital	42	13	Mediating role	10
4	Job burnout	20	14	Medical staff	10
5	Mediating effect	16	15	Job resources	10
6	Professional identity	16	16	Work stress	9
7	Organizational identification	16	17	Preschool teachers	9
8	Influencing factors	14	18	Organizational commitment	9
9	Psychological empowerment	13	19	professional burnout	9
10	Job performance	12	20	Social support	8

Analysis of Table 1's top 20 keywords (all exceeding 8 occurrences) shows dominant terms including “work engagement,” “nurses,” “psychological capital,” “job burnout,” “mediating effect,” “professional identity,” and “organizational identity.” This reflects three key patterns: First, extreme focus on specific occupations—particularly “nurses” (frequency=60)—highlighting concentrated scholarly attention on healthcare practitioners’ engagement [2]. Second, psychological mechanisms prevail, as evidenced by strong linkages among “psychological capital” (frequency=42), “professional identity” (frequency=16), and “organizational identity” (frequency=16), indicating dual-path exploration of drivers via individual resources and organizational identification. Third, negative effects receive substantial attention, with “job burnout” (frequency=20) frequently appearing as a counter-concept, underscoring research emphasis on engagement-depletion equilibrium. Methodologically, “mediating effect” (frequency=16) demonstrates a distinct preference for mediation/moderation models to dissect complex pathways. Collectively, Chinese research exhibits a “problem-driven (healthcare/education focus), mechanism-deepening (dual psychological-organizational paths), effect-balanced” pattern, though limitations persist in subject generalizability and theoretical innovation.

3.3. Keyword Cluster Analysis of Work Engagement

CiteSpace evaluates knowledge graph quality using Modularity (Q-value) and Mean Silhouette (S-value). The Q-value measures network modularity, where $Q > 0.3$ indicates significant graph structure with cohesive clusters. The S-value assesses cluster homogeneity, and $S > 0.5$ demonstrates reasonable clustering with well-defined themes [3].

In the cluster analysis results of this study (Figure 3), the Q-value of 0.513 exceeds 0.5, indicating a significant modular structure in the network and highly cohesive clustering outcomes.

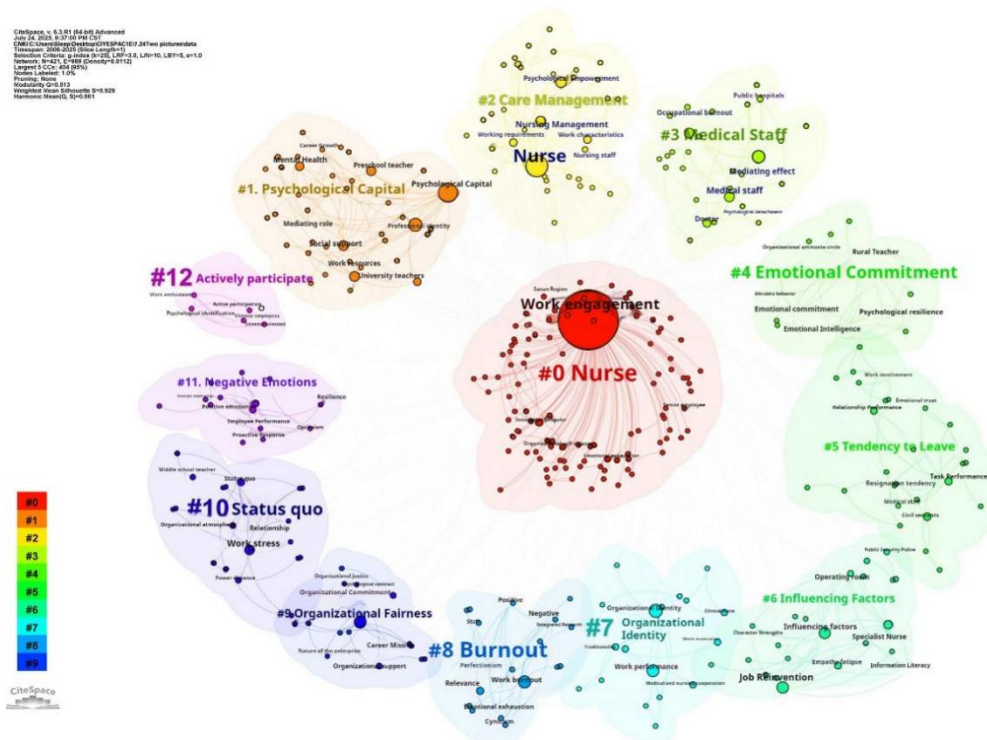


Figure 3. Keyword cluster map of domestic work engagement research.

The S-value of 0.929 surpasses 0.7, demonstrating convincing clustering reliability. This structurally robust and methodologically sound clustering enables more accurate analysis and interpretation of the overall characteristics and evolutionary trends in work engagement research. A total of 13 valid clusters (#0 to #12) were identified through the clustering process.

4. Hotspot Themes in Work Engagement Research

4.1. Occupation-Specific Studies

The thematic cluster (#0 Nurses, #4 Affective Commitment, #5 Turnover Intention, #10 Status Quo, Table 2) features keywords including innovative behavior, rural teachers, task performance, and relationships. Research predominantly examines healthcare, education, and civil service professionals. Cai Fangfang [4] investigated work engagement's mediating mechanism between decent work perception and innovative behavior among emergency nurses. Guo Wenbin [5] identified affective commitment as both a significant predictor of engagement and a partial mediator between psychological needs and engagement in rural teachers. Wan Pengyu [6] surveyed 414 tax system civil servants across 14 bureaus, demonstrating work engagement's partial mediation of authentic leadership's effect on turnover intention. Liu Peng [7] reported favorable overall engagement levels among 474 secondary school PE teachers, with absorption scoring highest, followed by vigor and dedication. Collectively, these studies reveal China's distinctive focus on high-pressure/service occupations (nurses/teachers/civil servants), highlighting profession-specific variations in engagement levels, drivers (e.g., affective commitment), and outcomes (e.g., innovation vs. turnover), thereby necessitating targeted enhancement strategies.

Table 2. Major thematic clusters in domestic work engagement research.

Number	Theme	Cluster	Representative Keywords			
1	Occupation-Specific Studies	#0 Nurses	Innovative behavior	organizational self-esteem	emotional exhaustion	
		#4 Affective commitment	Rural teachers	emotional intelligence	resilience	organizational climate
		#5 Turnover intention	Task performance	job involvement	affective trust	civil servants
		#10 Status quo	Relationships	work stress	secondary school teachers	organizational atmosphere
2	Psychological Resources & Depletion	#2 Nursing management	Psychological empowerment	nursing staff	job demands	
		#8 Job burnout	Perfectionism	correlation	JD-R model	emotional exhaustion
		#11 Negative emotions	Hope	positive emotions	resilience	optimism
		#12 Active participation	Psychological identification	interest orientation	Chinese employees	work passion
3	Organizational Context	#6 Influencing	Specialist nurses	job crafting	compassion fatigue	information literacy

	& Outcomes	factors				
		#7 Organizational identification	Job performance	medical collaboration	traditionality	work motivation
		#9 Organizational justice	Organizational commitment	organizational support	calling	firm ownership
4	Methodology & Frameworks	#1 Psychological capital	Mediating role	university teachers	social support	professional identity
		#3 Medical staff	Mediating effect	professional burnout	public hospitals	psychological detachment

4.2. Psychological Resources and Depletion Mechanisms

The thematic cluster (#2 Nursing Management, #8 Job Burnout, #11 Negative Emotions, #12 Active Participation) features keywords such as psychological empowerment, perfectionism, hope, and psychological identification. Psychological resources and depletion mechanisms constitute essential dimensions of work engagement research. Rui Yehao [8] examined 48 pain-management nurses, demonstrating that empowerment interventions elevate psychological empowerment and engagement levels, thereby enhancing inpatient pain management efficacy. Liu Na [9] surveyed 364 nurses across three tertiary hospitals, establishing perfectionism as a critical factor influencing both burnout and engagement. Zhang Shuhua [10] employed experience sampling methodology—collecting 670 daily reports from 70 university counselors over ten workdays—with multilevel analysis revealing that daily hope partially mediates the relationship between positive emotions and engagement while fully mediating negative emotions' effects. Xu Yan [11] developed and validated a work engagement scale for corporate employees through literature analysis, interviews, and questionnaires, identifying four dimensions: interest orientation, work passion, psychological identification, and active participation. Collectively, these studies reflect China's in-depth exploration of engagement-driving psychological resources and their cultivation pathways, coupled with rigorous attention to depletion mechanisms. This reveals that sustaining engagement requires developing/protecting individual psychological resources while leveraging positive emotions to counteract negative states, embodying the dual perspectives of "resource gain and depletion prevention" in engagement research.

4.3. Organizational Context and Behavioral Outcomes

Clusters #6 Influencing Factors, #7 Organizational Identification, and #9 Organizational Justice include keywords like specialist nurses, job performance, and organizational commitment. Ye Wenxiu [12] surveyed 330 emergency specialist nurses across 63 hospitals, identifying career capital as an engagement determinant and noting moderate-to-high engagement levels. He Li [13] confirmed transformational leadership's strong positive impact (vs. transactional) on organizational identification, engagement, and performance—effects mediated by identification and engagement. Qu Xinyan [14] established organizational commitment's mediating role and organizational justice's moderating effect between employee values and engagement. These studies elucidate how organizational factors

shape engagement through cognitive (e.g., identification) and affective (e.g., commitment) pathways, ultimately driving critical behavioral outcomes (performance/turnover). This confirms engagement's embeddedness in organizational ecosystems, requiring synchronized optimization of contexts and management practices.

4.4. Methodological and Theoretical Frameworks

The thematic cluster (#1 Psychological Capital, #3 Medical Staff) features keywords such as mediating role and mediating effect, underscoring the critical function of methodological and theoretical frameworks in work engagement research. Wang Lihua[15] conducted questionnaire surveys with 415 rural primary school teachers, revealing significant positive correlations between perceived organizational support and professional calling, psychological capital, and work engagement. Mediation analysis further demonstrated that professional calling and psychological capital fully mediate the relationship between perceived organizational support and work engagement. Similarly, Li Mengting [16] identified suboptimal engagement levels among medical personnel, with job burnout exhibiting a partial mediating effect between work-family conflict and engagement. This suggests that reducing burnout can mitigate the negative impact of work-family conflict on engagement—thereby enhancing overall healthcare quality. Collectively, these studies exemplify the distinctive empirical methodology characterizing domestic work engagement research: the pervasive application of mediation/moderation analyses to elucidate complex variable interactions, typically grounded in established theoretical frameworks to construct and validate integrated mechanistic models. This approach provides robust methodological foundations and theoretical explanations for understanding engagement formation mechanisms.

5. Evolutionary Trends in Work Engagement Research

This study employs CiteSpace's visualization capabilities to reveal the diachronic evolutionary path of work engagement research in China. The keyword timeline cluster map (Figure 4) systematically traces the developmental trajectory of domestic work engagement studies over the past two decades. From 2006 to 2025, academic progress demonstrates distinct phased characteristics. Integrated with the annual publication volume trend (Figure 1), this evolution can be categorized into three progressive stages.

The first stage marks the embryonic period of domestic work engagement research (2006-2009). This initial phase represented the foundational stage of scholarly exploration in China, characterized by preliminary investigative efforts. Research focus centered predominantly on introducing the concept of work engagement and establishing basic theoretical frameworks. During this period, scholars began importing Western theories on work engagement while attempting localized conceptual interpretations. Methodologically, studies primarily employed theoretical discussions supplemented by limited questionnaire surveys, with corporate employees constituting the predominant research subjects. For instance, some researchers initiated examinations distinguishing work engagement from job burnout and conducted preliminary explorations into engagement dimensions. In applied research, measurements were mainly conducted using imported assessment tools to gauge work engagement levels among domestic corporate employees; however, a systematic localized research framework had yet to be established.

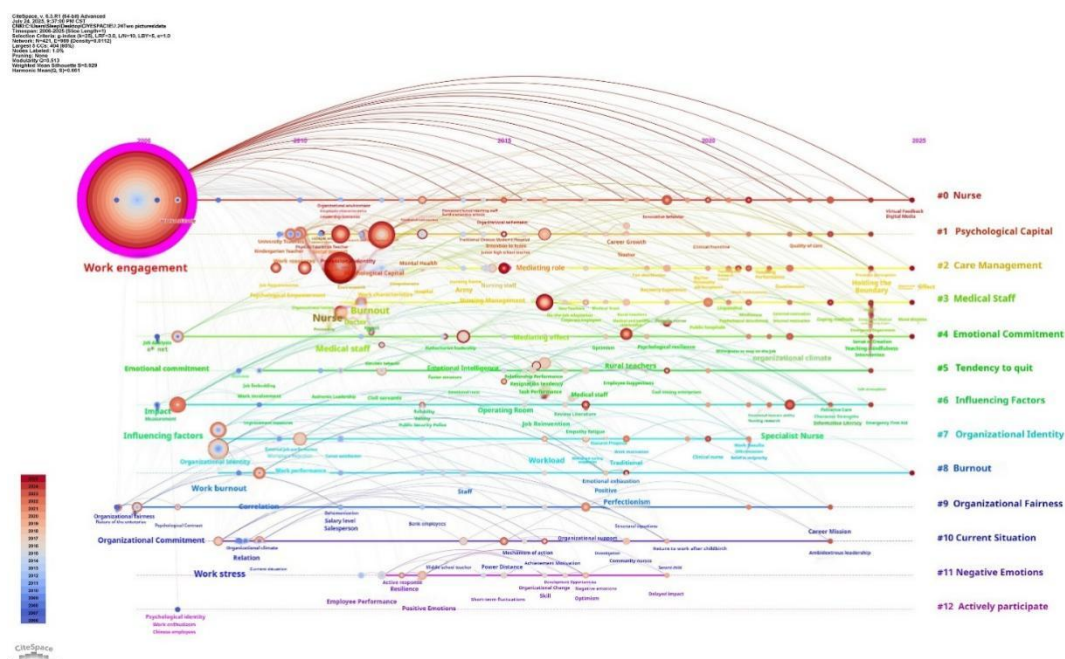


Figure 4. Timeline Cluster Map of Domestic Work Engagement Keywords.

The second stage constitutes the development period of domestic work engagement research (2010-2017). During this phase, the field entered a rapid growth trajectory characterized by several defining developments. The scope of research subjects expanded significantly beyond corporate employees to encompass diverse professional groups including teachers, healthcare workers, and civil servants. Investigations targeting occupation-specific engagement dynamics proliferated, exemplified by studies examining relationships between teachers' work engagement and pedagogical effectiveness, as well as correlations between healthcare workers' engagement and patient care quality. Methodologically, approaches became more diversified and scientifically rigorous: questionnaires were supplemented by statistical techniques such as structural equation modeling to investigate engagement's influencing factors and underlying mechanisms. Scholars initiated in-depth explorations into relationships between antecedents (e.g., organizational support, leadership styles) and outcomes (e.g., job performance, turnover intention). Parallel to these developments, attention turned toward creating culturally adapted measurement instruments, with researchers beginning to develop work engagement scales tailored to China's sociocultural context.

The third stage represents the deepening period of domestic work engagement research (2018-2025). During this phase, investigations exhibited greater depth and diversification across multiple dimensions. On one hand, studies increasingly emphasized interdisciplinary integration, examining work engagement through convergent lenses from psychology, management, and sociology. This included exploring linkages between engagement and employee well-being through positive psychology frameworks, alongside sociological analyses of social support networks' impact on engagement. On the other hand, researchers turned attention to emerging frontiers such as engagement dynamics within digital work environments and the effects of remote working models. Methodologically, qualitative approaches—including case studies and in-depth interviews—gained prominence alongside traditional quantitative methods, enabling deeper excavation of engagement's intrinsic mechanisms and evolving processes. Concurrently, heightened emphasis was placed

on practical applications, with research actively translating findings into concrete strategies for enhancing employee engagement and providing targeted guidance for organizational human resource management practices.

6. Conclusions and Future Directions

6.1. Conclusions

This study systematically examines the hotspots and evolutionary trends of domestic work engagement research by analyzing 520 core journal articles indexed in the China National Knowledge Infrastructure (CNKI) database from 2006 to 2025. Utilizing CiteSpace visualization tools—including keyword co-occurrence, cluster analysis, and timeline mapping—the principal conclusions are as follows:

6.1.1. Multidimensional Research Hotspots

Domestic work engagement scholarship converges on four core domains: First, occupation-specific investigations focus on engagement characteristics among nurses, teachers, and civil servants, revealing profession-dependent variations in stressors, psychological resources, and behavioral outcomes—exemplified by nurses' emotional exhaustion and rural teachers' affective commitment. Second, research on psychological resources and depletion mechanisms examines dynamic equilibria between resources (e.g., psychological capital) and depletion factors (e.g., job burnout), alongside applications of the Job Demands-Resources (JD-R) model. Third, studies of organizational context and behavioral outcomes explore how organizational justice, support, and job crafting influence performance and turnover intention, emphasizing the catalytic roles of organizational identification and professional calling. Fourth, methodological and theoretical frameworks prioritize mediation/moderation analyses integrated with psychological capital and JD-R theories, constructing multidimensional mechanisms to advance theoretical localization and methodological diversification.

6.1.2. Phased Research Trajectory

The domestic research evolution progresses through three stages: The embryonic period (2006-2009) centered on introducing Western theories and defining foundational concepts, with corporate employees as the primary subjects and qualitative methods predominating; no localized system emerged. The development period (2010-2017) expanded subjects to teachers, healthcare workers, and other professions, shifting toward empirical methodologies like structural equation modeling to explore antecedent-outcome linkages while initiating culturally adapted scale development. The deepening period (2018-2025) exhibits interdisciplinary convergence, focusing on emerging domains like digital work environments, adopting mixed quantitative-qualitative methods, and translating findings into targeted organizational strategies.

6.1.3. “Problem-Mechanism-Practice” Paradigm

Guided by the dual objectives of enhancing organizational efficacy and employee well-being, Chinese research has evolved from early theoretical transplantation to mid-stage group-differentiated exploration, culminating in interdisciplinary integration and dynamic mechanism analysis. This progression has established a distinctive paradigm characterized by: centering on high-stress occupations (e.g.,

nurses/teachers), dissecting dual psychological-organizational pathways, and balancing positive/negative effects (engagement vs. burnout). Collectively, these advances lay the groundwork for work engagement frameworks attuned to China's cultural and workplace contexts.

6.2. Future Research Directions

6.2.1. Subject Refinement and Expansion

Current work engagement research has examined diverse occupational groups including nurses, teachers, and civil servants. Future studies should deepen investigations into specialized domains within these professions while expanding focus to emerging occupations (e.g., gig economy workers) and corporate employees. This expansion will address existing sectorial representation gaps within the literature.

6.2.2. Integrated Multidimensional Research

Building upon psychological resource-depletion mechanisms, future work should explore dynamic interrelationships between positive psychological traits (resilience, optimism) and negative states (job burnout, emotional exhaustion), particularly their complex interactions affecting engagement. For instance, examining how cultivating employee resilience counteracts burnout's detrimental effects on engagement. Presently, organizational contexts and individual factors remain siloed; future research must integrate organizational elements (fairness, support, climate) with individual characteristics (psychological capital, professional identity, emotional intelligence) to holistically reveal their synergistic mechanisms. Exemplary investigations could analyze how organizational support moderates the relationship between psychological capital and engagement.

6.2.3. Interdisciplinary Approaches and Novel Methodologies

As work engagement spans psychology, management, and sociology, interdisciplinary integration requires further deepening. Beyond traditional surveys and interviews, emerging methodologies should be prioritized: big data analytics of behavioral and performance metrics will enable real-time monitoring of engagement flux, while laboratory and field experiments will more precisely establish causal pathways between determinants and engagement outcomes.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

References

- [1] Kahn, W.A. Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 1990, 33(4), 692-724.
- [2] Lyu, X.; Jiang, H.; Chu, W. et al. The effect of nurse-physician collaboration on work engagement: the chain mediating effect of risk perception and professional identity. *J Psychol Sci*, 2020, 4, 937-942.

- [3] Li, M.; Zhang, L. Knowledge mapping of research on the Party's self-reform: Status, hotspots, and prospects. *Guizhou Social Sciences*, 2023, 397(1), 31-39.
- [4] Cai, F.; Li, L.; Huang, Z. et al. Chain mediating effects of professional respect and work engagement on the relationship between decent work perception and innovative behavior in emergency nurses. *Journal of Nursing*, 2023, 30(18), 17-22.
- [5] Guo, W.; Ma, Y.; Ji, G. The impact of psychological needs on work engagement among rural teachers: The mediating role of organizational commitment. *Contemporary Education and Culture*, 2019, 11(05), 89-97.
- [6] Wan, P.; Feng, Z.; Xu, A. et al. Effects of authentic leadership and work engagement on turnover intention among grassroots tax officials. *China Occupational Medicine*, 2016, 43(05), 564-567.
- [7] Liu, P. A Study on the Relationship between Job Burnout and Job Involvement of Middle School PE Teachers-- Based on the Mediating Role of Professional Identity [Doctoral dissertation, Henan University], 2021.
- [8] Rui, Y.; Liu, Y.; Deng, C. et al. Impact of empowerment on psychological empowerment and work engagement in pain management nurses. *Chinese Journal of Clinical Research*, 2024, 37(02), 312-315.
- [9] Liu, N.; Liu, Q.; Sun, S. et al. Effects of perfectionism on job burnout and work engagement in nurses. *Chinese Nursing Research*, 2018, 32(21), 3426-3429.
- [10] Zhang S.; Wang K. Emotions, hope, and work engagement: Evidence from experience sampling method. *Human Resources Development of China*, 2017, 11, 65-75.
- [11] Xu, Y. Development and validation of work engagement scale for corporate employees [Master's thesis, Soochow University], 2005.
- [12] Ye, W.; Jin, J.; Lan, M. et al. Work engagement status and influencing factors among emergency specialist nurses. *Chinese Journal of Nursing Education*, 2023, 20(06), 661-665.
- [13] He, L.; Ling, W. Leadership style and job performance: Roles of organizational identification and work engagement. *Enterprise Economy*, 2010, 11, 65-68.
- [14] Qu, X. Employee values, organizational commitment and work engagement [Doctoral dissertation, Xiamen University], 2022.
- [15] Wang, L. Effect of perceived organizational support on work engagement in rural primary teachers: Chain mediating roles of calling and psychological capital. *Educational Measurement and Evaluation*, 2025, 03, 12-20.
- [16] Li, M.; Zheng, B.; Liu, X. et al. Mediating effect of job burnout between work-family conflict and work engagement in medical staff. *Journal of Nursing Management*, 2025, 25(03), 267-271.



© 2025 by the author(s); licensee International Technology and Science Publications (ITS), this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (<http://creativecommons.org/licenses/by/4.0/>)