

The Impacts of Work Connectivity During Non-Office Hours on Employee's Attitudes and Behaviors: A Comparative Case Between General Staffs and Executives in Educational Institutions in Shandong Province of China

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Abstract

This study examines the impact of work connectivity during non-office hours on attitudes and behaviors among educational institution employees in Shandong Province, China, comparing experiences between executives and general staff. Based on the Conservation of Resources theory and the Job Demand–Resource model, the research analyzed 626 valid questionnaires using SPSS and AMOS software. The results indicated that work connectivity during non-office hours positively influences role overload and counterproductive work behavior while negatively affecting the quality of work life and employee engagement for general staff and executives. However, the impact was more pronounced among the general staff. The study also found that information technology and high identity awareness had different impacts on work connectivity during non-office hours for the two groups. The research concludes that while work connectivity is inevitable, its management is crucial to mitigate its adverse effects on employees.

Keywords: work connectivity during non-office hours; employee attitudes; employee behavior; educational institutions

Introduction

Due to the permeability of work and non-work boundaries (Hall, 1988), early studies focused on factors that make employees stay connected to work after hours. The research found that employees with more substantial career ambitions were more likely to maintain work connections after work (Simosi et al., 2015).

Digital Work Connectivity is defined as the use of digital technologies to work away from the usual workplace or working hours. (Macijauskienė & Stankevičiūtė, 2022). The academic community uses various terms for this phenomenon, including Communication Technology Use at Home. (Park et al., 2011) and Smartphone Use After Hours (van Zoonen et al., 2020). While these concepts target similar phenomena, their varying expressions challenge integrating research in this field.

According to the Conservation of Resources Theory, when individuals perceive resource depletion, they engage in defensive behaviors to compensate for their losses. (Hobfoll, 1989). Research has shown that work connectivity during non-office hours represents a high work demand that leads to emotional and energy depletion. (Derks & Bakker, 2014). This "invisible overtime" severely depletes individual resources, making employees more likely to engage in negative coping behaviors.

Educators face intensive teaching and research responsibilities as China's education industry transitions from rapid growth to quality-driven development. This study employs the Job Demands-Resources model and Conservation of Resources Theory to investigate how work connectivity during non-office hours affects the attitudes and behaviors of both general staff and executives, aiming to enhance organizational effectiveness and employee well-being in the education sector.

Research Objectives

1. To examine how work connectivity during non-office hours influences workplace attitudes and behaviors among educational staff at different organizational levels (general staff and executives) in Shandong Province's educational institutions.
2. To analyze the differential impacts of after-hours work connectivity between general staff and executives, focusing on their job satisfaction, work-life balance, and organizational commitment.

3. To develop evidence-based recommendations for educational institutions to effectively manage after-hours work connectivity, aiming to optimize organizational performance while protecting employee well-being.

Scope of Research

This study examines work connectivity during non-office hours in educational institutions. It investigates the patterns and frequency of after-hours work connectivity, its impact on workplace attitudes and behaviors, and the differences between general staff and executives in their responses to such connectivity. Additionally, the study explores the relationship between work connectivity and various organizational outcomes in educational settings.

The population for this research consists of full-time employees in educational institutions across Shandong Province, China.

The research was completed within two years, encompassing the entire process from initial design through data collection and analysis to the final formulation of recommendations.

Literatures Review

Underpinning Theories

Conservation of Resources Theory (COR) is an essential branch of stress research, which was first proposed by Stevan E. Hobfoll (Hobfoll, 1989) to explain individuals' behavior in stressful situations based on the perspective of resource gain and loss, reflecting the resource interaction process between individuals and the social environment. Hobfoll (1989) defined resources as "individual characteristics, conditions, energy, and other things that individuals find valuable or ways to obtain them." Resource conservation theory assumes that people actively acquire and strive to maintain and protect critical resources. According to the core view of the theory, the more resources individuals have, the less likely they are to suffer from attacks or threats of resource loss, and the more capable they are of acquiring resources (Hobfoll & Freedy, 2017). At the same time, the theory also reflects the core driver of work-family gain generation – resource synergy.

The Job Demand-Resource model (JD-R) provides a theoretical explanation of the pathways through which work connectivity during non-office hours affects the attitudes and behaviors of general staff and executives from the perspective of resource gains and losses. Ragsdale and Hoover

(2016) argued that work resources and demands characterize work connectivity during non-office hours. Specifically, they argue that we can understand work connectivity during non-office hours as characterized by work demands in three ways: first, it provides a gateway into non-work life for work demands. Second, work connectivity during non-office hours provides a gateway to work-related information, which causes people to spend more time working and thinking about work-related issues, which is harmful to both family and work; third, it makes some organizations raise expectations or norms for employees to continue working during non-work hours. Third, it causes some organizations to raise expectations or norms for employees to continue working during non-work hours. Meanwhile, work connectivity during non-office hours is a resource for employees with high work role perceptions. Ragsdale and Hoover (2016) conducted a study of 313 full-time employees, which showed that work-based cell phone use during non-work hours and cell phone attachment was positively associated with work engagement.

For the definition of office hours and non-office hours, in addition to the division of workplace, working hours, and employment relationship, there is also the psychological boundary of employees' work content beyond regular working hours, i.e., the situation in which employees think they should be away from all work-related activities and thinking beyond regular working hours is non-office hour. Non-office hours will focus more on employees' work behavior within the employment relationship but outside the time and place of work as specified in the employment contract and as perceived by the employees. This paper argues that the time spent on work-related matters and performing actual work duties during the free time not at the employer's disposal is "invisible work time," which will continuously consume employees' physical energy and effort and increase employees' self-consumption may give rise to counterproductive work behavior and reduce employee engagement.

Technological innovation and information technology development support global integration. On the one hand, technological developments have replaced some of the old jobs, possibly replacing some regular employees with non-regular employees and increasing the competitive pressure in the workplace. On the other hand, the development of information technology and changes in communication technology have broken down physical boundaries, and employees have become more flexible in how, when, and where they work. (Adisa et al., 2017; Wang et al., 2020), causing the boundaries between work and non-work to become increasingly blurred. While technology

enhances efficiency, it also makes it easier for work to invade non-work areas, leading to invisible work hour extensions.

Many sociologists have elaborated on identity from the perspective of identity awareness. Identity awareness is a self-recognition and determination of identity, which is the manifestation of identity at the psychological level. In this study, identity awareness is distinct from the recognition of identity. According to Albert et al. (2000), identity indicates the degree to which an individual is embedded in the identity in question. The social identity theory defines social and individual identities, respectively. In contrast, personal identity is a person's distinctive self-perception (Onorato & Turner, 2015), a collection of many traits, including characteristics, abilities, and interests. From the above definition of awareness, awareness focuses on describing the relationship between the individual and the object in question. It is concerned with understanding the exact situation of the individual and a particular identity from different perspectives of the relationship.

Perceive role overload is a perception of role stress that arises when individuals lack sufficient resources to complete their various role requirements. (Karatepe, 2013). French et al. (2022) stated that work-family conflict occurs when the demands of work and family are incompatible, and individuals have difficulty meeting or completing the activities expected of both roles. Work-family conflict events deplete psychological resources and can leave individuals feeling exhausted. The accumulation of work-family conflict events reduces the individual's chances of recovering and returning to normal levels of functioning. It is evident that as work connectivity during non-office hours increases, individuals may lack effective recovery, resulting in perceived role overload.

Work connectivity during non-office hours may cause employees to feel overloaded, affecting their well-being. Following this logic, the cognitive appraisal theory of emotions states that individuals make cognitive assessments of stressful situations in primary and secondary stages. (Moors, 2020).

The emergence of the quality of work life can be traced back to the findings of Mayo's study of the Hawthorne factory in 1933. This study suggested the social environment and psychological factors affecting workers' performance and led business owners to realize the importance of humanizing their employees' working conditions.

The quality of work and life diverge. According to Akinwale et al. (2024), quality of work-life refers to an individual's holistic assessment of his/her quality of work and life based on specific

criteria. In this study, QWL refers to various work-related characteristics that can bring different experiences to workers. The combined effect of these experiences determines the degree of well-being that employees obtain at work. Employee work experience is closely related to the organization's various management measures.

Kahn's (1990) hypothesis of employee engagement is based on the premise that people can regulate their energy at work by giving much of it. Kahn (1990) proposed the premise that people can regulate their energy at work and give a lot of their energy to work, but at the same time, they can also give only a tiny amount of their energy to work. Based on this assumption, there are two academic concepts: employee engagement and disengagement at work, the former corresponding to the pole of releasing more personal energies, and the latter corresponding to the pole of reducing contributed energies, constituting two aspects of the same problem (Kahn, 1990). This understanding is consistent with the traditional Chinese understanding of dedication: dedicated employees can put more energy into their work; disengaged or insufficiently dedicated employees do the opposite. Dedicated and disengaged, dedicated enough and not dedicated enough are all on the axis of employee engagement and disengagement.

Research Methodology

The scope of this study focuses on educational employees in Shandong Province, which has approximately 1.42 million full-time teachers across various educational levels, including preschool, primary, secondary, and higher education institutions.

For this study, employees are categorized into two groups: general staff (teachers with only teaching responsibilities) and executives (teachers with administrative duties or both teaching and administrative responsibilities). Based on field observations, the population ratio between general staff and executives in Shandong's educational institutions is approximately 2:1.

Following the sample size recommendations for Structural Equation Modeling (SEM) studies (Christopher Westland, 2010), which suggests a sample size between 200 and 500 when using the maximum likelihood method; this study distributed 700 questionnaires (450 to general staff and 250 to executives). Six hundred twenty-six valid responses were collected, with 424 from general staff and 202 from executives, meeting the recommended sample size requirements for robust statistical analysis.

Research Results

This study employed a quantitative research approach using survey questionnaires to investigate the relationships between key variables in the context of after-hours work connectivity. The research examined the relationships among information technology usage, identity awareness, work connectivity during non-office hours, perceived role overload, quality of work life, employee engagement, and counterproductive work behavior.

Data analysis was performed using SPSS and AMOS software, with 626 valid questionnaires collected (202 from executives and 424 from general staff). Confirmatory factor analysis (CFA) confirmed the validity of the measurement model, with factor loadings exceeding 0.7, AVE values above 0.5, and CR values above 0.7, meeting the criteria for convergent validity and internal consistency. Discriminant validity was also confirmed, as the square root of the AVE for each construct exceeded its correlations with other constructs.

The data met the requirements for structural equation modeling, which was conducted using AMOS. Model fit was assessed with multiple indices: the Chi-square/df ratio was below 3, GFI, AGFI, and CFI all exceeded the 0.9 thresholds for a good fit, and RMSEA was below 0.08, indicating an adequate fit.

Table 1 Results of Structural Equation Modeling of Executives

Path relationship		Estimate	S.E.	C.R.	P
WCNOHE	<---	IDAE	0.426	0.067	6.370
WCNOHE	<---	ITE	0.533	0.070	7.586
ROE	<---	WCNOHE	0.230	0.067	3.411
QWLE	<---	WCNOHE	-0.284	0.076	-3.725
EEE	<---	WCNOHE	-0.298	0.083	-3.603
CWBE	<---	WCNOHE	0.274	0.065	4.200

NOTE: * p<0.05 ** p<0.01 *** p<0.001

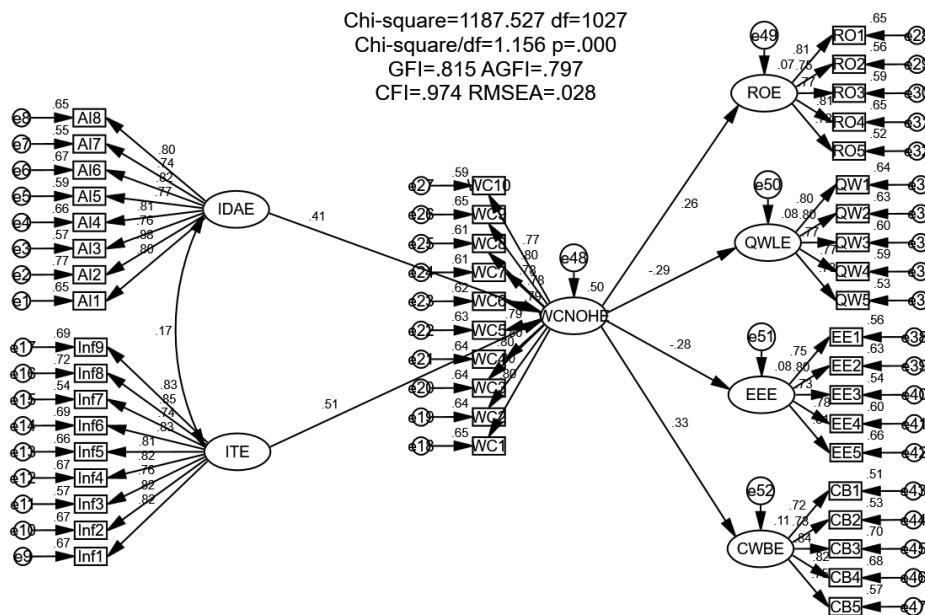


Fig.1 The Modified Structural Equation Model of Executive

Table 2 Results of Structural Equation Modeling of General Staff

Path relationship		Estimate	S.E.	C.R.	P	
WCNOHGS	<---	IDAGS	-0.376	0.048	-7.784	***
WCNOHGS	<---	ITGS	0.469	0.052	9.010	***
ROGS	<---	WCNOHGS	0.563	0.060	9.334	***
QWLGS	<---	WCNOHGS	-0.557	0.059	-9.453	***
EEGS	<---	WCNOHGS	-0.784	0.069	-11.412	***
CWBGS	<---	WCNOHGS	0.709	0.060	11.724	***

NOTE: * p<0.05 ** p<0.01 *** p<0.001

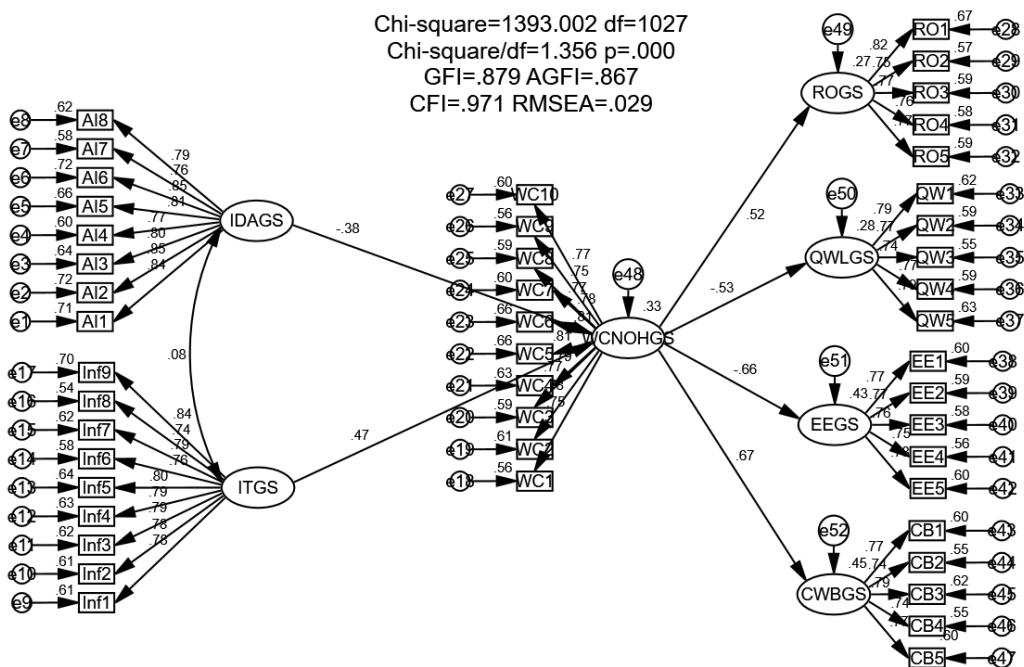


Fig. 2 The Modified Structural Equation Model of General Staff

In order to study whether there is a significant difference in the influence of leaders and employees on the six paths, a multi-group structural equation model was used for comparative analysis, a restrictive model that set the six paths to be equal, and an unrestricted model that did not set it, compare, if the chi-square difference reaches significance, it means that the models are not equal, that is to say, there is a significant difference in the path influence between the leader and the employee. Further, each path is tested for differences to obtain the specific path with differences. The specific results are as follows:

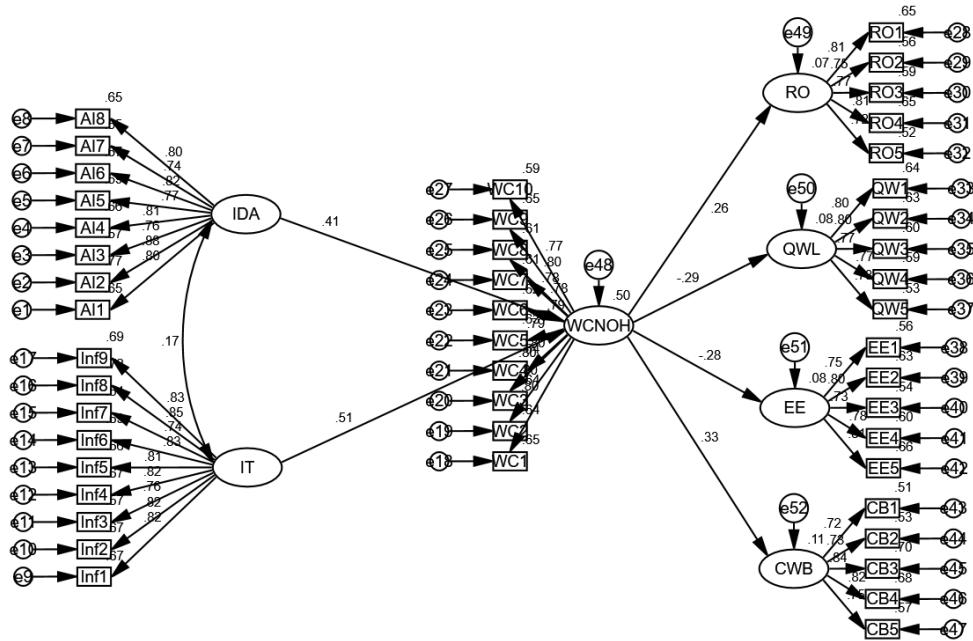


Fig. 3 The Multigroup Analysis of Executives

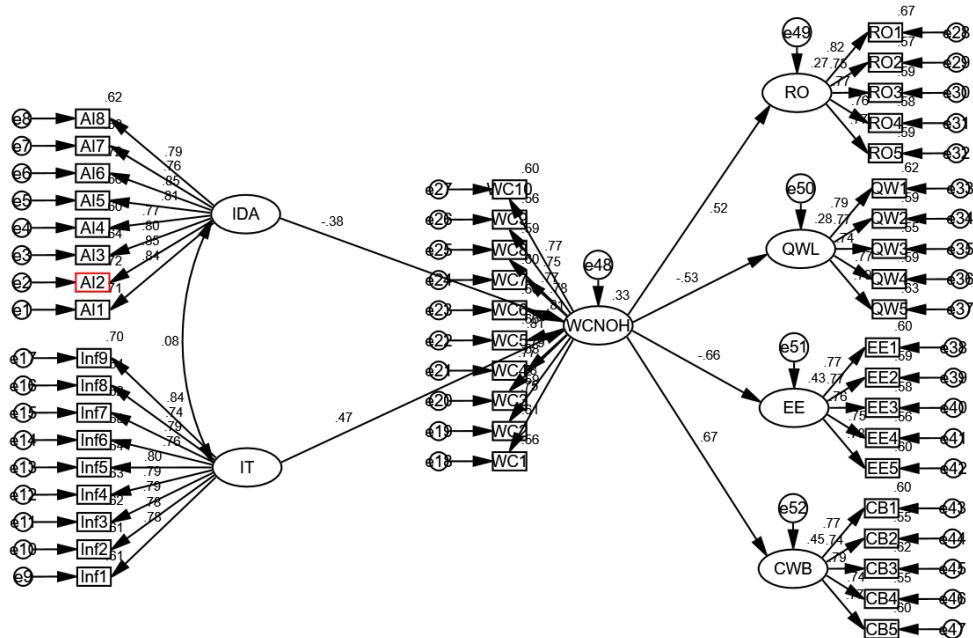


Fig. 4 The Multigroup Analysis of General Staff

Table 3 Constrained and Unconstrained fit indices

Statistical test	Unconstrained	Saturated model	χ^2 Change	DF Change	P
χ^2	2581.402	2734.474	153.072	6	0.000
DF	2054	2060			

The table above shows that the chi-square difference between the restrictive and unrestricted models is 153.072, and the degree of freedom difference is 6. The corresponding P is 0.000, which indicates a significant difference between the two models; that is, there are differences between executives and general staff among these six paths.

Table 4 Path difference analysis

	Group1 Executives					Group2 General Staff					Contradistinction	
	β	Standard	t	P	β	Standard	t	P	Coefficient	T Absolute	difference	value > 1.96
		error			error				difference			
WCNOH	<---	IDA	0.408	0.067	6.375	***	-0.377	0.048	-7.781	***	-0.785	-9.725
WCNOH	<---	IT	0.508	0.07	7.593	***	0.468	0.052	9.006	***	-0.04	-0.730
RO	<---	WCNOH	0.264	0.067	3.414	***	0.515	0.06	9.33	***	0.251	3.687
QWL	<---	WCNOH	-0.288	0.076	-3.728	***	-0.53	0.059	-9.449	***	-0.242	-2.841
EE	<---	WCNOH	-0.281	0.083	-3.606	***	-0.658	0.069	-11.408	***	-0.377	-4.519
CWB	<---	WCNOH	0.33	0.065	4.204	***	0.673	0.06	11.719	***	0.343	4.894

Comparing the Executives group and the General Staff group, we can find six differences between the two models. After analyzing each path, it was found that every path in the Executives group is significant and meets the hypothesis requirements. Every path in the General Staff group is consistent. The difference between the two must be noticeable. The difference in T value is greater than 1.96, which is significant, and the comparison shows that there is a difference.

Discussion

Firstly, work connectivity during non-office hours increased role overload for general staff and executives. However, the effect was more pronounced for general staff, who reported a higher sense of overload than executives. This suggests that general staff are more likely to experience work-life conflict due to after-hours connectivity. Similarly, work connectivity during non-office hours negatively impacted both groups' quality of work life, with a more significant decline observed among general staff. This aligns with the notion that general staff may find it harder to disengage from work after hours, leading to reduced well-being (Schaufeli.

et al., 2008). Both groups also experienced decreased employee engagement, with general staff again showing a more substantial decline. This suggests that general staff may find it more difficult to maintain enthusiasm and motivation when work spills over into personal time (Kammeyer-Mueller et al., 2016). Finally, work connectivity during non-office hours was associated with more counterproductive work behavior among general staff, while executives exhibited relatively less such behavior. This could be due to the differing levels of responsibility and control over work-life boundaries between the two groups.

Secondly, a comparative analysis of general staff and executives revealed that information technology facilitated work connectivity outside of office hours for both groups. However, executives were more significantly impacted by technological advancements, likely due to their higher access to and responsibility for communication tools. (Cascio & Montealegre, 2016). The study also found that the two groups' identity awareness influenced work connectivity differently. For executives, high identity awareness increased after-hours connectivity, likely reflecting their more substantial alignment with organizational goals. (van Zoonen et al., 2023). In contrast, the general staff's heightened sense of identity decreased work connectivity during non-office hours, suggesting they may prioritize work-life balance when feeling more connected to the organization. (Cheung, 2024).

Finally, the study suggests that fostering correct identity awareness is key to managing the negative impacts of work connectivity during non-office hours. For general staff, promoting an identity that emphasizes work-life balance could help mitigate role overload and improve the quality of work-life. (Ekpechi & Igwe, 2023). For executives, cultivating an understanding of the importance of boundaries between work and personal life could prevent overextension and counterproductive behaviors. (Lebrón et al., 2018). Additionally, institutions should consider offering organizational support, such as flexible work policies and stress management resources, to help general staff and executives manage after-hours connectivity more effectively.

In conclusion, this study highlights the complex dynamics of work connectivity during non-office hours and its differential impacts on general staff and executives. It suggests that tailored strategies focused on enhancing work-life balance and organizational support are crucial for improving employee well-being and productivity.

Conclusion

The study investigated how work connectivity during non-office hours affects employees differently based on their organizational position (executives vs. general staff). The research found that information technology enables after-hours work connectivity for both groups, with slightly more potent effects on executives. High identity awareness produced opposing effects: increasing executives' after-hours connectivity while decreasing it for general staff, possibly due to executives' imposter syndrome.

After-hours work connectivity negatively impacted both groups' quality of work life, employee engagement, and counterproductive work behavior, with general staff experiencing slightly stronger negative effects than executives. This aligns with the Conservation of Resources Theory, as after-hours work depletes valuable non-renewable time resources needed for recovery and personal life.

The findings highlight the need to address and regulate after-hours work connectivity, as it consistently demonstrates negative impacts on employee wellbeing and performance regardless of organizational position.

Suggestions

For policymakers and organizational leaders, the study underscores the critical need to establish comprehensive psychological resource management systems in China's educational sector. This should begin with implementing a formal psychological resource compensation mechanism that acknowledges and addresses the mental toll of after-hours work connectivity. Organizations should develop policies that expand tolerance intervals for response times and create structured feedback channels to manage work expectations. Additionally, maintaining appropriate psychological distance through clear work-life boundaries is essential. These policy-level interventions should protect employees' non-work time while maintaining organizational flexibility.

At the management practice level, organizations must proactively mitigate the hidden risks of excessive work connectivity during non-office hours. This includes standardizing online office work protocols, monitoring and supporting employee psychological well-being, and fostering positive work cognition to prevent negative attitudes and behaviors. Managers should optimize work design to maintain appropriate difficulty and intensity levels, particularly considering the different impacts on

executives and general staff. These practical measures should be implemented alongside regular assessments of their effectiveness in reducing resource depletion and improving work-life balance, with special attention to role-specific needs and challenges identified in the study.

New Knowledge

This study offers new insights into how work connectivity during non-office hours affects different employee groups in educational institutions. A key finding is the paradoxical role of identity awareness: For executives, higher identity awareness increases after-hours connectivity, driven by imposter syndrome and heightened role expectations. In contrast, general staff with high identity awareness can better maintain boundaries, reducing after-hours connectivity. This highlights how organizational roles influence employees' responses to work demands.

The study also reveals that while both groups experience negative impacts from after-hours connectivity, general staff face more severe disruptions to work-life balance and role overload. Using the Conservation of Resources Theory, the research shows how continuous connectivity depletes psychological resources, leading to decreased work-life quality, lower engagement, and more counterproductive behaviors. These findings underline the need for role-specific policies to manage after-hours work and protect employee wellbeing.

Overall, this research deepens our understanding of how technological connectivity interacts with organizational hierarchy and emphasizes the need for tailored approaches to managing work outside traditional office hours.

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