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How Does Change Fatigue Influence Teaching Innovation Behaviour: A Moderated Mediation Model of Job Crafting and Relational Leadership

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Abstract: In the era of ongoing educational reform and rapid digital transformation, teachers are increasingly required to respond to frequent organisational and instructional changes. Under such conditions, teachers may experience change fatigue, which may in turn influence their engagement in teaching innovation. However, whether and how this mechanism operates remains insufficiently explored. This study examines the relationship between change fatigue and teaching innovation behaviour, with job crafting proposed as a mediating mechanism and relational leadership as a moderating condition on the first-stage path from change fatigue to job crafting. A cross-sectional survey design was conducted, drawing on data from 4,078 teachers in Shanghai who participated in the Teaching and Learning International Survey (TALIS 2024). The data were analysed using SPSS 27.0 through descriptive statistics, correlation analysis, and moderated mediation analysis with the Bootstrap method. In line with the TALIS-based operationalisation, teaching innovation behaviour is understood as innovation-related teaching practices; job crafting as teachers' adaptive and differentiated adjustments of instructional work; and relational leadership as teachers' perceptions of principal leadership involving participation, collaboration, trust, and professional support. The results indicate that change fatigue is positively and significantly associated with teaching innovation behaviour in the Chinese context. Job crafting partially mediates this relationship, whereas relational leadership moderates the association between change fatigue and job crafting. Although the findings are statistically significant, the observed effect sizes are small and should therefore be interpreted cautiously. The study suggests that schools should sustain a manageable level of organisational change, provide support for teachers' job crafting amid continuous reform, and develop relational leadership practices that help teachers cope with reform-related pressures, thereby facilitating adaptive and sustainable teaching innovation.

Keywords: Change fatigue, Job crafting, Teaching innovation behaviour, Relational leadership.

Introduction

In the era of accelerating educational reforms, organisational change has become a defining feature of contemporary schooling systems (Aldridge & McLure, 2024; Beycioglu & Kondakci, 2021). While these reforms aim to enhance educational quality, they may also induce change fatigue, a state of emotional exhaustion and reduced motivation resulting from repeated exposure to organisational changes without sufficient recovery time (Bernerth et al., 2011; Beaulieu et al., 2023; Dilekçi et al., 2025). According to the Conservation of Resources (COR) theory, individuals strive to maintain valued resources such as time, energy, and psychological capacity, and when these are threatened, they may reduce engagement in resource-intensive activities, including teaching innovation (Hobfoll, 1989; Halbesleben et al., 2014). Supportive mechanisms may buffer these effects, with relational leadership providing socio-emotional

resources to cope with reform pressures (Uhl-Bien, 2006), and job crafting enabling teachers to proactively adjust tasks and work relationships to better balance demands and resources (Wrzesniewski & Dutton, 2001), thereby sustaining innovative behaviour despite ongoing organisational change.

However, the impact of change fatigue on teaching innovation behaviour may also be positive. According to the Yerkes-Dodson law, moderate levels of change-related stress can act as a challenge, mobilising resources and stimulating adaptive problem-solving and experimentation (Yerkes & Dodson, 1908; Teigen, 1994; Xie et al., 2024; Baer & Oldham, 2006). In educational settings, moderate reform pressure may therefore encourage teachers to experiment with instructional approaches and redesign practices, indicating that fatigue can sometimes stimulate adaptive and innovative behaviour, contrary to the predictions of the COR theory. Whether change fatigue inhibits or promotes teaching innovation behaviour likely depends on the institutional and policy context.

Chinese teachers are currently experiencing unprecedented educational reforms, including the “Double Reduction” and “Health First” policies and curriculum restructuring (Cao et al., 2022). These changes have led to varying degrees of change fatigue among teachers. However, observational evidence suggests that teachers’ work engagement, innovative behaviours, and organisational commitment remain relatively high (Chen & Murray, 2025). Despite this, the relationship between change fatigue and teaching innovation behaviour in the Chinese context has not yet been empirically examined. Shanghai has a highly developed urban education system in China. Thus, this study does not position the Shanghai sample as representative of developing countries in general, but examines teachers’ responses to change fatigue within a Chinese reform-oriented educational context. Therefore, this study aims to investigate the direct impact of change fatigue on teachers’ teaching innovation behaviour, as well as the underlying mechanisms influencing this relationship.

Research Problem

Although previous studies have examined change fatigue in organisational settings, its relationship to teachers’ teaching innovation behaviour remains underexplored. Existing research often emphasises the negative consequences of fatigue, such as reduced engagement, emotional exhaustion, and withdrawal. However, in educational reform contexts, teachers may also respond to pressure for change through adaptive instructional adjustments. This raises an important question: Does change fatigue inhibit teachers’ innovation-related teaching practices, or can it be associated with proactive adaptation under certain conditions?

A further problem concerns the mechanism through which change fatigue may be related to teaching innovation behaviour. Job crafting provides a useful explanatory mechanism because it refers to employees’ proactive adjustment of their work tasks, relationships, and perceptions in order to better align job demands with personal resources and professional goals (Wrzesniewski & Dutton, 2001). In the teaching context, job crafting may appear as teachers’ adaptive, differentiated adjustments to instructional work. When teachers experience change fatigue, they may respond by modifying teaching strategies, seeking support, or reorganising instructional practices, which, in turn, may be associated with teaching innovation behaviour.

Another issue concerns the role of relational leadership. Relational leadership emphasises trust, communication, participation, collaboration, and supportive relationships between leaders and teachers (Uhl-Bien, 2006). According to the specification of PROCESS Model 7, relational leadership should be positioned as a moderator of the first-stage path from change fatigue to job crafting. In other words, the leadership context may influence whether and how teachers translate change-related pressure into adaptive work adjustment.

Research Focus

This study examines the relationships among change fatigue, job crafting, relational leadership, and teaching innovation behaviour among teachers in Shanghai, using TALIS 2024 data. In response to the operational characteristics of the TALIS items, this study interprets the core constructs cautiously. Teaching innovation behaviour is understood as TALIS-based innovation-related teaching practices, including the use of digital tools and instructional adjustments. Job crafting is understood as teachers' adaptive, differentiated adjustments to instructional work. Relational leadership is understood as teachers' perceptions of principal leadership involving participation, collaboration, trust, and professional support.

Research Aim and Research Questions

This study aims to examine how change fatigue is associated with teachers' teaching innovation behaviour and to clarify the mediating role of job crafting and the moderating role of relational leadership in this relationship.

Specifically, this study addresses the following research questions:

RQ1: What is the relationship between change fatigue and teaching innovation behaviour among teachers in the Shanghai TALIS 2024 sample?

RQ2: Does job crafting mediate the relationship between change fatigue and teaching innovation behaviour?

RQ3: Does relational leadership moderate the relationship between change fatigue and job crafting?

RQ4: Does the indirect relationship between change fatigue and teaching innovation behaviour through job crafting vary across different levels of relational leadership?

By addressing these questions, this study seeks to provide empirical evidence on teachers' adaptive responses to continuous educational reform. It also aims to offer a more cautious interpretation of statistically significant findings by acknowledging that small effect sizes should not be overstated as strong practical effects.

Literature Review

Change fatigue

Change fatigue refers to a state of exhaustion, stress, and burnout that arises when employees are exposed to excessive, rapid, or continuous organisational changes, resulting in the depletion of their adaptive capacity and emotional resources (Bernerth et al., 2011). Unlike resistance to a single reform initiative, change fatigue reflects a broader, more persistent erosion of individuals' ability to cope with ongoing change. When employees repeatedly face new policies, restructuring, or procedural adjustments, they may gradually experience psychological strain and reduced tolerance for additional change demands. Prior research has identified several core manifestations of change fatigue, including constant exposure to change, feelings of powerlessness, diminished personal agency, emotional exhaustion, and a gradual shift toward passive acceptance of new initiatives (McMillan & Perron, 2020; Cao et al., 2024). These symptoms are particularly visible in high-demand professional environments where organisational changes occur frequently and require continuous adaptation.

The experience of change fatigue can produce significant consequences for both individuals and organisations. From the perspective of COR theory, individuals seek to protect and preserve their limited psychological resources. When frequent organisational changes continuously consume resources such as

time, energy, and emotional capacity, employees may adopt resource-conservation strategies, including reducing discretionary effort and limiting additional engagement at work (Hobfoll, 1989). Consequently, change fatigue has been linked to diminished job satisfaction, increased emotional exhaustion, withdrawal behaviours such as quiet quitting, and reduced organisational commitment (Dilekçi et al., 2025). At the organisational level, these responses can undermine adaptive performance, weaken teamwork, and hinder the successful implementation of change initiatives (Camilleri et al., 2019; Chaoping et al., 2025). In some cases, persistent fatigue may also evolve into change cynicism, further reducing employees' willingness to support future reforms (Ouedraogo & Ouakouak, 2021).

However, the relationship between change fatigue and work outcomes may not be entirely negative. According to the Yerkes-Dodson law, moderate levels of pressure or stress may stimulate motivation and enhance performance. Within this perspective, a certain level of pressure generated by ongoing organisational change could serve as a challenge stressor that encourages individuals to mobilise their resources and engage in adaptive problem-solving behaviours. Despite this theoretical possibility, most empirical studies have documented the negative effects of change fatigue (de Vries & de Vries, 2023; Ma et al., 2025). Moreover, existing research has largely focused on high-intensity organisational contexts, particularly in healthcare settings such as nursing, where scholars have examined the association between high-intensity organisational contexts and job satisfaction, turnover intentions, and patient care quality (Yu et al., 2025; Beaulieu et al., 2023).

Nevertheless, observations in the Chinese educational context suggest that this predominantly negative perspective may not fully capture teachers' experiences (Hallinger, 2020). In recent years, Chinese teachers have faced frequent educational reforms, curriculum revisions, administrative policy changes, and increasing societal expectations (Li et al., 2025). These continuous changes undoubtedly create considerable workload and pressure (Teng et al., 2024). However, in practice, many teachers remain highly engaged in their professional responsibilities and continue to demonstrate diligence and proactive work behaviours despite experiencing substantial fatigue (Gu et al., 2024; Ren et al., 2025). This phenomenon suggests that change fatigue may not always translate into withdrawal or reduced effort. Instead, within the Chinese cultural and institutional context, characterised by collectivist norms, high respect for professional dedication, and strong organisational commitment, teachers may reinterpret demands for change as professional responsibilities and continue investing effort in their work (Zheng et al., 2024). Consequently, it is possible that change fatigue in this context could coexist with sustained or even enhanced work engagement and proactive behaviours. Based on this observation, this study proposes that the relationship between change fatigue and teachers' work outcomes may be more complex than suggested by existing literature, potentially including positive behavioural responses rather than purely negative reactions.

Teaching innovative behaviour

Innovation behaviour is commonly conceptualised as employees' efforts to generate, promote, and implement novel ideas, processes, or practices within an organisation (Purwanto et al., 2020). In educational settings, teaching innovation behaviour involves teachers proactively designing, adopting, and enacting new pedagogical approaches, instructional strategies, technologies, or assessment practices to enhance teaching effectiveness and foster student learning (Shi, 2018; Sun & Yuan, 2025). Such behaviours are continuous and embedded in daily instructional work, including lesson redesign, the integration of digital technologies, student-centred pedagogies, and flexible adaptation to diverse learner needs (Sofwan et al., 2024). Teaching innovation behaviour reflects teachers' proactive agency in reshaping tasks and work relationships, emphasising autonomy and professional initiative rather than passive compliance with reforms (Li & Zhu, 2022).

Amid ongoing educational reforms in China, teachers face curriculum adjustments, digital transformation, and heightened accountability, which can accumulate into change fatigue, manifesting as emotional exhaustion and reform cynicism (Wu et al., 2022). Such stressors may inhibit experimentation with innovative practices. To sustain teaching innovation, both individual and organisational factors are critical. At the individual level, psychological resources such as self-efficacy, emotional intelligence, and professional beliefs, as well as job characteristics like autonomy and manageable workload, support innovative engagement (Li & Zhu, 2025). At the organisational level, supportive leadership, collaborative culture, and an innovation-oriented climate provide essential resources and encouragement (Ma & Zhang, 2025). Teachers may also actively reconfigure their work to regain control and meaning under reform pressures. At the same time, school support can mitigate the negative effects of fatigue by providing resources, guidance, and emotional reassurance (Zhao & Huang, 2025). Together, these mechanisms underscore that sustaining teaching innovation amid continuous change relies on both proactive teacher behaviours and enabling organisational conditions (Bao, 2018).

Job crafting

Job crafting is traditionally defined as a proactive, self-initiated process in which employees modify aspects of their jobs (Wrzesniewski & Dutton, 2001). However, in educational settings, teachers' opportunities to reshape formal job boundaries are often constrained by institutional structures and curriculum requirements. As a result, such behaviours may manifest more prominently through adaptive instructional practices, including adjusting teaching strategies and responding to students' diverse learning needs. In this sense, the behaviours examined in this study may reflect a context-specific form of job crafting, expressed through instructional adaptation rather than formal job redesign. Building on this foundational perspective, later research integrated job crafting into the Job Demands–Resources (JD-R) framework, conceptualising it as the self-initiated adjustments employees make to balance job demands and resources in pursuit of optimal work functioning (Tim et al., 2012). According to the JD-R model (Bakker & Demerouti, 2017), job demands consume individual energy while job resources replenish it; job crafting, therefore, serves as a key self-regulatory mechanism through which employees actively recalibrate this balance.

The importance of job crafting lies in its ability to enhance person–job fit and sustain employees' psychological resources in demanding work environments. By seeking additional resources, redefining tasks, or reducing hindering demands, employees can maintain work engagement and mitigate the negative effects of exhaustion and burnout (Tims et al., 2013; Wang et al., 2017). Meta-analytic evidence further distinguishes between approach-oriented crafting, such as increasing structural or social resources and seeking challenging demands, and avoidance-oriented crafting, which involves reducing hindering demands to protect cognitive and emotional capacity (Rudolph et al., 2017; Zhang & Parker, 2019). Through these mechanisms, job crafting enables employees to adapt their work to changing circumstances while preserving motivation and well-being.

Given these adaptive functions, job crafting has frequently been examined as a mechanism through which employees cope with workplace stressors. When individuals experience pressure, frustration, or resource depletion at work, they may proactively adjust their tasks, relationships, or perceptions to restore a sense of control and meaning. Empirical studies have shown that job crafting can mediate the relationship between workplace stressors and important work outcomes, such as work engagement, job satisfaction, and performance (Rudolph et al., 2017; Parker & Grote, 2022). In this sense, job crafting serves as a behavioural strategy that transforms challenging working conditions into opportunities for adjustment and resource recovery. In this sense, such behaviours may represent a form of adaptive instructional adjustment rather than comprehensive job redesign.

In organisational contexts characterised by continuous change and reform, employees may be particularly likely to rely on job crafting to cope with emerging pressures. Persistent reforms may generate change fatigue, which depletes psychological resources and reduces individuals' motivation to engage in constructive behaviours. Under such conditions, employees who actively engage in job crafting may attempt to reconfigure their tasks, seek additional support, or reinterpret their roles to regain control and maintain meaningful engagement. However, despite the growing recognition of job crafting as an adaptive strategy for coping with workplace stress, its role in the context of change fatigue remains insufficiently understood. In particular, it remains unclear whether and how job crafting may help transform the potentially negative effects of change fatigue into constructive outcomes, such as innovative work behaviours. If employees actively reshape their work in response to change-related pressures, such as crafting behaviours, they may help sustain or even enhance innovative engagement. Nevertheless, the mechanisms by which job crafting operates in environments characterised by change fatigue remain underexplored, underscoring the need for further investigation. However, the extent to which such adaptive behaviours can meaningfully transform the effects of change fatigue remains uncertain, and their influence may be relatively modest.

Relational leadership

Relational leadership is often conceptualised as an approach that emphasises interpersonal relationships, trust, and collaboration within leadership processes (Uhl-Bien, 2006). However, in large-scale survey contexts such as TALIS, leadership is typically operationalised through teachers' perceptions of general school leadership practices. Therefore, in this study, relational leadership is defined as the perceived quality of leadership interactions and support within the school context, including communication, support, and participation. Within this perspective, leadership effectiveness arises from the quality of relationships developed between leaders and followers. Trust, mutual respect, open communication, and collaborative engagement are therefore regarded as core elements that enable collective sense-making and coordinated action within organisations (Cunliffe & Eriksen, 2011; Raelin, 2016; Liou & Daly, 2025; Saltmarsh, 2025).

Subsequent research has further highlighted the significance of relational leadership in organisational and educational contexts. By fostering high-quality relationships and cultivating a climate of psychological safety, relational leaders may encourage members to share knowledge, voice ideas, and participate in collaborative problem-solving processes. In schools, where teaching and learning are inherently collaborative activities, relational leadership is particularly important for supporting professional learning and collective innovation. Empirical and conceptual studies suggest that leadership practices grounded in trust, dialogue, and collaboration can enhance teachers' professional engagement, well-being, and willingness to experiment with new pedagogical approaches (Al-Mahdy et al., 2024; Natland et al., 2025). More recent studies also indicate that relational and participative leadership practices help build trust-based school communities, which in turn improve teachers' professional satisfaction and collaborative learning (Pinheiro et al., 2025; Ma et al., 2024; Washington, 2025).

Furthermore, relational leadership has increasingly been associated with teachers' innovative practices (Arif et al., 2025). By valuing teachers' perspectives and encouraging collaborative decision-making, relational leadership empowers teachers to contribute ideas and participate in organisational improvement initiatives. Research suggests that relational leadership fosters cultures of mutual respect and ethical responsibility, which can strengthen institutional innovation and support educational transformation (Cohen et al., 2025; Campbell et al., 2025).

Within the context of continuous educational reforms that often generate change fatigue, relational leadership may exert both positive and negative influences on teaching innovation behaviours. On the one

hand, relational leadership can mitigate the negative effects of change fatigue. By fostering supportive relationships, transparent communication, and participatory decision-making processes, relational leaders help teachers interpret reform initiatives more constructively and maintain a sense of professional agency (Fahy et al., 2024; Alaimo & Kelly, 2025; Qadach et al., 2025). Such relational support may replenish teachers' psychological resources and create a trusting environment that encourages experimentation with innovative teaching strategies despite ongoing reforms (Laufer et al., 2025; Richardson & Khawaja, 2025). While relational leadership may help mitigate some negative effects of change fatigue, its influence may be limited and context-dependent.

On the other hand, relational leadership may not always fully offset the pressures associated with persistent change. Because relational leadership often emphasises collaboration and shared participation in change processes, teachers may become more involved in reform-related activities and collective decision-making. Although such involvement can strengthen commitment and collective responsibility, it may also increase teachers' workload and emotional investment in reform initiatives (Bao, 2024). Under conditions of severe change fatigue, these additional demands may further strain teachers' resources and potentially weaken their motivation to pursue innovative teaching practices (Yilmaz & Tore, 2025; Özkul & Yildizbas, 2025).

Overall, relational leadership may serve as a contextual factor influencing how teachers respond to organisational change, although its effect may be relatively modest. By shaping the relational climate and resource environment within schools, relational leadership may either buffer or interact with change fatigue, ultimately influencing teachers' engagement in innovative teaching behaviours (Chaaban et al., 2025; Javed et al., 2025).

Research Hypothesis

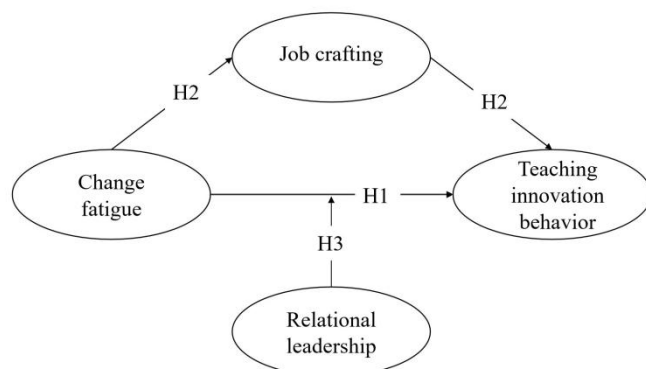
Based on the above analysis, this study will explore how change fatigue influences teaching innovation behaviour and will propose the following hypothesis.

- H1:** Change fatigue is positively associated with teaching innovation behaviour.
- H2:** Job crafting mediates the relationship between change fatigue and teaching innovation behaviour.
- H3:** Relational leadership moderates the relationship between change fatigue and teaching innovation behaviour.

The research model is shown in Fig. 1.

Figure 1

Research model



Methodology

Participants

TALIS is being conducted by the Organisation for Economic Co-operation and Development (OECD). The fourth Teaching and Learning International Survey (TALIS 2024) is an international survey that offers teachers and principals the opportunity to provide input on educational analysis and policy development. More than 50 other countries are taking part in the survey. Among them, 4078 teachers from Shanghai participated in this survey through a random sampling strategy, with questionnaires distributed via an Online platform. All participants responded to the electronic questionnaires anonymously. Participants were given 45-60 minutes to complete the survey voluntarily, ensuring flexibility and reducing potential response biases. Demographic information and some career-related information were also collected to facilitate comprehensive data profiling. It showed that there were 1,053 male teachers, accounting for 25.8% of the total; 3,003 female teachers, accounting for 73.7% of the total; and the rest, 0.5%.

Measures

All items were derived from the TALIS 2024 teacher questionnaire, and analyses were based on weighted data from the official TALIS 2024 database. Responses were coded and aggregated as described below.

Change fatigue: Measured using Question 72 in TALIS 2024. Change fatigue was incorporated into the school climate dimension of the TALIS questionnaire. It asked teachers to rate the extent to which they agreed or disagreed with statements about the school's changes (regardless of whether these changes were initiated by the school itself or caused by external factors), with 15 items including change frequency (e.g., Too many change initiatives are introduced at this school.), change perception (e.g., I am tired of all the changes in this school.), change resource support (e.g., I am asked to implement change initiatives without the necessary resources.), and the desire for stability in changes (e.g., I would like to see a period of stability before we change anything else in this school.). Participants responded to a four-point Likert scale, ranging from "1=Strongly disagree" to "4=Strongly agree" Higher scores on the scale indicate greater levels of change fatigue. The scale demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.828.

Teaching innovation behaviour: Measured using Question 52 in TALIS 2024. The 11-item scale measures teachers' behaviors which includes support teaching content and classroom management (e.g., Replace printed materials with digital versions.), promote collaboration and interaction (e.g., Use <digital resources and tools> to enable collaboration with other classrooms, schools, or experts outside of this school.), empower students' autonomous learning and personalized learning (e.g., Use <digital resources and tools> that provide personalised learning paths for students.) Participants responded to a four-point Likert scale, ranging from "1=Never or rarely" to "4=always" Higher scores on the scale indicate greater levels of teachers' teaching innovation behaviour. The scale demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.917.

Job crafting: Measured using Question 55 in TALIS 2024. The 5-item scale measures include the dynamic adjustment during teaching interaction and implementation stage (e.g., I change my way of explaining when a student has difficulties understanding a topic or task), and adaptive adjustments during the instructional design and planning stage (e.g., I point students to different materials for learning depending on their needs). Participants responded to a four-point Likert scale, ranging from "1=Never or rarely" to "4=always" Higher scores on the scale indicate greater levels of job crafting. The scale demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.932.

Relational leadership: Relational leadership was measured using Question 66 in TALIS 2024, which was incorporated into the School climate dimension of the TALIS questionnaire. The 12-item scale measures include the behaviours for establishing a shared vision and promoting collaboration (e.g., the principal encourages all staff to have a say on important decisions), empowering and developing teachers (e.g., the principal ensures that teachers take responsibility for improving their teaching skills) and building and maintaining trusting relationships (e.g., the principal has good professional relationships with staff). Participants responded to a four-point Likert scale, ranging from “1=Strongly disagree” to “4=Strongly agree” Higher scores on the scale indicate greater levels of relational leadership. The scale demonstrated high internal consistency, with a Cronbach’s alpha coefficient of 0.979.

Data Analysis

The data for this study were analysed using SPSS 27.0, a widely used statistical software package for social science research that supports reliable descriptive statistics, common method bias testing, and Bootstrap analysis. To explore the model of how change fatigue affects teaching innovative behaviour, as well as the mediating role of job crafting and the moderating effect of relational leadership, this study used Model 5, which is consistent with the research, in the SPSS macro program PROCESS for analysis. Initially, the data underwent a common method bias test, descriptive statistical analysis and correlation analyses. Additionally, the researchers utilised the bias-corrected percentile Bootstrap approach to assess the significance of the mediating role of job crafting and the moderating role of relational leadership.

Results

Common method bias test

To prevent common method bias, the questionnaires were completed and collected anonymously. Harman’s single-factor test was conducted to assess the common method bias. The results indicated the extraction of 1 common factor with an eigenvalue greater than 1.0 from all question items. The first factor accounted for 34.5% of the variance, which was lower than the 40% critical value. These findings suggest there is no common method bias issue in this study.

According to Table 1, the mean values for change fatigue, teaching innovation behaviour, job crafting, and relational leadership are relatively high, at 10.89, 10.91, 10.87, and 10.91, respectively. It should be noted that, due to the official weighting process applied to the TALIS data, the average value has exceeded 10. Moreover, change fatigue was significantly and positively related to teaching innovation behaviour ($r = 0.155, p < 0.001$), job crafting ($r = 0.134, p < 0.001$), and relational leadership ($r = 0.102, p < 0.001$). Teaching innovation behaviour was significantly and positively correlated with job crafting ($r = 0.138, p < 0.001$) and relational leadership ($r = 0.113, p < 0.001$). Job crafting was significantly and positively associated with relational leadership ($r = 0.114, p < 0.01$).

Table 1

Descriptive statistics and correlation analysis (N=4078)

Variable	M	SD	1	2	3	4
1=Change fatigue	10.891	5.936	1			
2=Teaching innovation behavior	10.914	6.162	0.155**	1		
3=Job crafting	10.869	5.945	0.134**	0.138**	1	
4=Relational leadership	10.913	6.093	0.102**	0.113**	0.114**	1

Note: M=mean; SD=standard variation. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed)

Evaluations of the moderated mediating model

To explore the model of how change fatigue affects teaching innovation behaviour, this study used Model 5 in SPSS macro PROCESS. While controlling for factors such as gender, age, and education level and using the bias-corrected percentile Bootstrap method, it analysed the mediating role of job crafting and the moderating role of relational leadership between change fatigue and teaching innovation behaviour (Table 2). With change fatigue as the independent variable, teaching innovation behaviour as the dependent variable, job crafting as the mediator, and relational leadership as the moderator.

The direct path from change fatigue to teaching innovation behavior was positive and statistically significant (effect=0.123, SE=0.016, 95% CI [0.092, 0.155]). Thus, H1 is supported. Besides, the indirect path from change fatigue to teaching innovation behavior through job crafting was also positive and significant (effect=0.007, SE=0.002, 95% CI [0.003, 0.011]). That is, job crafting plays a mediating role between change fatigue and teaching innovation behavior. Hence, H2 is supported.

Table 2

Test of the mediating effect

Path	Effect	SE	95%CI	
			Lower	Upper
Direct effect	0.123	0.016	0.092	0.155
Indirect effect	0.007	0.002	0.003	0.011

Furthermore, as shown in Table 3, the interaction term between change fatigue and relational leadership (CF × RL) was significantly negative (effect = -0.015, SE = 0.002, $t = -6.480$, $p < 0.001$), indicating that relational leadership plays a negatively moderating role in the relationship between change fatigue and teaching innovation behaviour.

Table 3

Test of the moderated mediating model

Variables (N=4078)		Overall Fit Coefficient					
Result variable	Predictive variable	R	R-sq	F	effect	SE	t
TIB		0.278	0.077	48.554			
	CF				0.123	0.016	7.622***
	RL				0.075	0.016	4.782***
	CF×RL				-0.015	0.002	-6.480***

Note: CF change fatigue, RL relational leadership, TIB teaching innovation behaviour * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The analysis of the moderating effect of relational leadership showed that, after incorporating relational leadership into the mediating model, the product term between change fatigue and relational leadership had a significant predictive effect on job crafting (Table 4).

Table 4

Moderating Effects at Different Levels of Relational Leadership

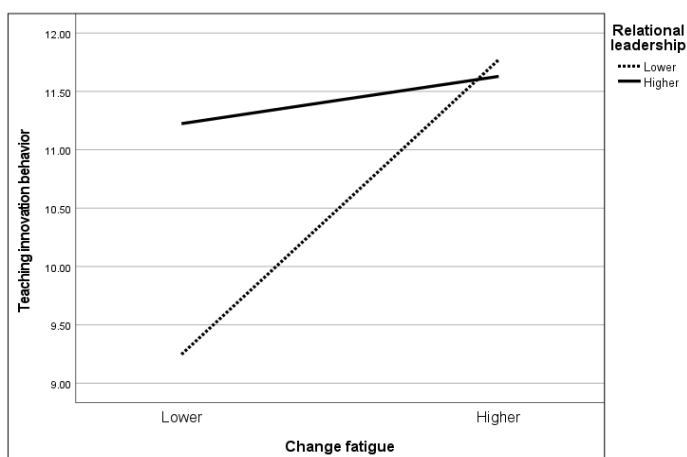
Path	RL	Effect	SE	95%CI
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CF→TIB	M-1SD	0.213	0.022	[0.169, 0.256]
	M	0.123	0.016	[0.092, 0.155]
	M+1SD	0.034	0.020	[-0.006, 0.074]

Further simple slope analysis was conducted to visualize the moderating effect of relational leadership on the relationship between change fatigue and teaching innovation behavior (Fig. 2). The results revealed that when relational leadership was low (M-1SD), change fatigue positively and significantly predicted teaching innovation behavior (effect = 0.213, 95% CI [0.169, 0.256]). However, when relational leadership was high (M+1SD), the effect of change fatigue on teaching innovation behavior became insignificant (effect = 0.034, 95% CI [-0.006, 0.074]). This pattern indicates that as the level of relational leadership increases, the positive relationship between change fatigue and teaching innovation behaviour gradually diminishes, and under highly supportive leadership, this relationship is fully buffered. The negative interaction term reported in Table 3 ($\beta = -0.015$, $p < 0.001$) confirms that the slope difference between low and high leadership conditions is statistically significant, reflecting a negative moderating effect.

Figure 2

Relational leadership moderates the relationship between change fatigue and teaching innovation behaviour



Discussion

This study examined the relationship between teachers' change fatigue and teaching innovation behaviour, exploring the mediating role of job crafting and the moderating role of relational leadership. The findings reveal three key insights: (1) change fatigue positively predicts teaching innovation behaviour, (2) job crafting partially mediates the relationship between change fatigue and teaching innovation behaviour, and (3) relational leadership negatively moderates the relationship between change fatigue and teaching innovation behaviour. However, it is critical to emphasise at the outset that although all effects reached statistical significance due to the large sample size ($N = 4,078$), the magnitude of these effects is uniformly very small (e.g., direct $\beta = 0.123$; indirect effect ≈ 0.007 ; interaction $\beta = -0.015$; model $R^2 = 0.077$). Therefore, all interpretations in the following sections should be considered strictly in statistical rather than substantive terms, and do not provide a sufficient basis for strong theoretical generalisation or practical intervention recommendations.

Change fatigue positively predicts teaching innovation behaviour

The results indicate that change fatigue has a significant and positive direct effect on teaching innovation behaviour ($\beta = 0.123$, $p < 0.001$). However, this effect size is extremely small in magnitude and should not be interpreted as evidence of a practically meaningful relationship. At first glance, this finding may appear counterintuitive, as previous studies generally associate fatigue with reduced engagement and lower levels of innovative behaviour (Xie et al., 2024).

However, in the context of ongoing educational reforms and rapid digital transformation, this relationship can be understood as a weak statistical covariation rather than a strong causal relationship. From a magnitude perspective, although statistically significant, this effect is relatively weak, suggesting that change fatigue is unlikely to function as a meaningful standalone predictor of teaching innovation behavior. Accordingly, change fatigue should be interpreted more appropriately as a background contextual variable rather than a substantive explanatory driver of innovation behavior. Accordingly, change fatigue should be interpreted more appropriately as a background contextual variable rather than a substantive explanatory driver of innovation behavior.

From a theoretical perspective, this finding partially challenges the predictions of conservation of resources theory, which suggests that resource depletion such as fatigue should reduce proactive and innovative behaviors. At the same time, the result is consistent with the challenge-hindrance stress framework (Cavanaugh et al., 2000) and the Yerkes-Dodson law, both of which suggest that moderate levels of pressure may stimulate effort, problem solving, and performance improvement. In reform-intensive environments, teachers may perceive change-related demands not only as resource loss but also as challenges that require active adaptation. However, given the trivial magnitude of the effect, the empirical support for this theoretical deviation remains limited and should be interpreted cautiously rather than as a substantive theoretical contradiction. As a result, instead of withdrawing from work demands, teachers may respond by experimenting with new teaching strategies, integrating digital technologies, and redesigning instructional practices (Sarigül & Uğurluoğlu, 2023). These responses are likely context-dependent and vary across individuals and institutional settings rather than representing a uniform behavioral pattern.

This pattern may be particularly evident in the Chinese educational context. China's education system has experienced frequent, top-down policy reforms, such as the New Curriculum Reform and the "Double Reduction" policy, which have created continuous pressure for pedagogical adaptation (Cheng et al., 2023; Liu et al., 2024). At the same time, collectivist cultural norms and strong professional commitment often encourage teachers to transform pressure into collective problem-solving rather than disengagement (Wang & Chang, 2025). Within teaching research groups and professional learning communities, teachers frequently engage in collaborative reflection and experimentation, which may facilitate localised and incremental forms of teaching innovation (Gu et al., 2025). In addition, institutional evaluation and promotion systems in many schools place considerable emphasis on demonstrable teaching innovation, which may partially encourage teachers to respond to reform pressure through pragmatic instructional adjustments.

Overall, these findings suggest that the relationship between change fatigue and innovation may be more complex than traditionally assumed. Rather than uniformly inhibiting innovative behavior, moderate levels of reform-related fatigue may sometimes be associated with adaptive and problem-oriented innovation. This does not imply that excessive fatigue is beneficial. Instead, it indicates that the effects of change fatigue may depend on contextual conditions and the intensity of reform pressures. Practically, school leaders should recognise that while moderate reform pressure may be associated with experimentation and adaptive innovation, excessive or poorly managed change demands are more likely

to result in burnout and reduced innovation. Therefore, educational reforms should balance pressure with adequate support mechanisms so that change demands remain within a manageable range that promotes constructive adaptation rather than exhaustion.

Job crafting partially mediates the relationship between change fatigue and teaching innovation behavior

Job crafting partially mediates the relationship between change fatigue and teaching innovation behavior. However, consistent with the relatively small indirect effect size (effect ≈ 0.007), this mediating pathway should be interpreted as statistically detectable but substantively limited in explanatory strength. Although change fatigue exhibits a significant direct effect on innovation, the findings confirm that job crafting also serves as a critical mediating pathway. Specifically, increased change fatigue predicts higher levels of job crafting ($\beta = 0.089$, $p < 0.001$), which in turn predicts teaching innovation behavior (indirect effect = 0.007, SE=0.002, 95% CI [0.003, 0.011]). Given the extremely small magnitude of this indirect effect, job crafting should not be interpreted as a strong or dominant psychological mechanism, but rather as a minor and context-dependent behavioral adjustment process.

This mediation mechanism is robustly explained by integrating the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2017) with self-regulation theories. Change fatigue, as a chronic hindrance demand, depletes emotional and cognitive resources. However, consistent with the concept of challenge appraisal, this persistent strain can simultaneously trigger proactive self-regulatory efforts aimed at restoring equilibrium and personal efficacy (Tadic et al., 2015). Job crafting, defined as employees proactively making physical, relational, and cognitive changes to the boundaries and perceptions of their work (Wrzesniewski & Dutton, 2001), has emerged as a key self-regulation strategy in this context. Faced with exhaustion and cynicism from relentless reforms, teachers may engage in job crafting not as a discretionary act of job enrichment, but as a necessary coping tactic to manage overwhelming demands. For example, they might cognitively reframe a mandated digital tool by connecting it to a core pedagogical value, thereby increasing its personal meaningfulness. Simultaneously, they might adjust their task boundaries by experimenting with the tool in a low-stakes classroom activity first, or seek collaborative support from a tech-savvy colleague to reduce the perceived burden (Berg et al., 2010; Petrou, et al., 2018). These crafted adjustments transform an external, potentially depleting demand into a more personally managed process, creating a resource caravan (Hobfoll, 2002) that channels the pressure of change into structured, innovative adaptations.

The mediating role of job crafting underscores a nuanced process: innovation under duress is not merely a passive response but can be a strategic, self-initiated reconfiguration of the work itself. This finding aligns with research showing that job crafting can act as a behavioural buffer against burnout, converting negative stressors into opportunities for learning and competency development (Tims et al., 2016). However, given the very small indirect effect observed in this study, this theoretical interpretation should be viewed as conceptually plausible rather than strongly supported empirically.

In the educational landscape of continuous change, job crafting thus represents a vital micro-level mechanism through which teachers agentively navigate top-down reforms, translating the aversive experience of fatigue into observable, and often sustainable, innovative practices. Nevertheless, the present results suggest that this mechanism plays only a limited quantitative role in explaining variation in teaching innovation behaviour.

Relational leadership negatively moderates the relationship between change fatigue and teaching innovation behaviour

The findings further reveal that relational leadership negatively moderates the relationship between change fatigue and teaching innovation behaviour. Specifically, the interaction term between change fatigue and relational leadership is significantly negative ($\beta = -0.015$, $p < 0.001$). Although statistically significant, this interaction effect is extremely small in magnitude and should not be interpreted as evidence of a practically meaningful moderating mechanism or leadership prescription. Simple slopes analysis shows that when relational leadership is low, change fatigue significantly and positively predicts teaching innovation behaviour (effect size = 0.213, 95% CI [0.169, 0.256]). However, when relational leadership is high, the relationship becomes insignificant (effect = 0.034, 95% CI: [-0.006, 0.074]). This pattern suggests that relational leadership buffers the motivating effect of change fatigue on teachers' innovative behaviours.

This finding can be interpreted through the lens of the Conservation of Resources (COR) theory. According to COR theory, individuals strive to protect and accumulate valuable resources in order to cope with stressful situations (Hobfoll, 2001). Change fatigue is a form of resource depletion caused by repeated demands for reform. When relational leadership is weak, teachers may lack institutional support and therefore rely more heavily on personal efforts to cope with reform pressures. Under such circumstances, teachers may actively experiment with new teaching methods, digital tools, or classroom strategies to regain control over their work and maintain professional effectiveness (Tahir et al., 2024). In this sense, innovation becomes a coping strategy that helps teachers respond to reform-induced fatigue.

However, when relational leadership is strong, school leaders provide teachers with substantial relational resources, including emotional support, open communication, collaborative decision-making, and trust-based relationships (Lager, 2025). These relational resources can alleviate teachers' perceived stress and reduce the urgency to respond to reform pressures by engaging in individual innovation efforts (Cao et al., 2025). As a result, the motivating effect of change fatigue on innovative behaviour becomes weaker. In other words, relational leadership acts as a buffering mechanism that reduces the pressure-driven pathway from change fatigue to teaching innovation behaviour (Linnenborn & Borchert, 2025).

This moderating pattern also reflects the specific organisational context of Chinese schools. In many Chinese educational settings, relational leadership practices often promote collective problem-solving through structures such as teaching research groups and professional learning communities (Ao et al., 2025). When such relational structures function effectively, teachers may rely more on collaborative adaptation than on individual experimentation to meet reform demands. Consequently, the direct link between change fatigue and individual innovative behaviour becomes less pronounced.

Overall, these findings highlight that relational leadership plays a critical contextual role in shaping teachers' responses to change fatigue. Rather than directly suppressing innovation, relational leadership modifies the mechanism through which fatigue influences teachers' innovative actions by providing relational resources and collective support systems.

Implications

This study offers new perspectives on how school leadership can sustain teacher innovation in high-change environments, with significant practical and theoretical implications.

Theoretical implications

This study offers several important theoretical implications for research on teacher innovation, organisational change, and educational leadership.

First, this study contributes to the literature on change fatigue by revealing its complex relationship with innovative behaviour. Previous studies generally conceptualise change fatigue as a negative outcome of excessive organisational change that reduces employee motivation, engagement, and creativity (Bernerth et al., 2011; Oreg et al., 2018). However, the findings of this study indicate that change fatigue can positively predict teachers' teaching innovation behaviour. This finding suggests that the effects of change fatigue are not uniformly detrimental and may depend on contextual conditions and coping mechanisms. In reform-intensive environments such as contemporary education systems, moderate levels of change pressure may stimulate adaptive responses and encourage teachers to experiment with new pedagogical strategies. This finding complements the challenge-hindrance stress framework, which suggests that certain types of work pressure may stimulate proactive behavior and performance improvement (Cavanaugh et al., 2000). Therefore, this study enriches the theoretical understanding of change fatigue by highlighting its potential role as a catalyst for adaptive innovation under certain conditions.

Second, this study extends the job crafting literature by identifying job crafting as a key psychological mechanism linking change fatigue to teaching innovation behaviour. According to the Job Demands-Resources model, employees actively adjust their work roles in order to cope with job demands and maintain work motivation (Bakker et al., 2021). Job crafting enables employees to redesign their tasks, relationships, and cognitive perceptions of work (Wrzesniewski & Dutton, 2001). The findings of this study suggest that teachers respond to reform-related pressure by proactively modifying teaching strategies, classroom activities, and instructional approaches, which in turn promotes innovative teaching behaviour. By integrating job crafting into the relationship between change fatigue and innovation, this study provides a deeper explanation of how teachers transform external pressures into constructive behavioural outcomes.

Third, this study contributes to leadership research by demonstrating the moderating role of relational leadership in the relationship between change fatigue and teaching innovation behaviour. Relational leadership emphasises trust, mutual respect, open communication, and collaborative relationships between leaders and employees (Bano et al., 2025). The results indicate that relational leadership weakens the positive relationship between change fatigue and innovative behaviour. This finding suggests that relational leadership functions as an important contextual resource that buffers the pressure-driven mechanism through which fatigue stimulates innovation. When relational leadership is strong, teachers receive greater emotional support and opportunities for collaboration, which reduces the need for individual coping responses driven by change fatigue. Thus, this study highlights the contextual role of leadership in shaping teachers' responses to reform-related pressures and extends existing research on leadership and proactive work behaviour.

Overall, by integrating change fatigue, job crafting, and relational leadership into a moderated mediation framework, this study advances theoretical understanding of how teachers maintain innovative behaviour in environments characterised by continuous organisational change.

Practical implications

This study also provides several practical implications for school leaders and educational policymakers seeking to sustain teaching innovation in reform-intensive environments.

First, schools should strategically initiate and manage reforms within the broader context of educational change. While excessive or poorly coordinated reforms can precipitate burnout and disengagement (Hobfoll, 2001; Hansen, 2025), deliberately paced and targeted initiatives can incentivize teachers to adopt innovative instructional practices and enhance pedagogical effectiveness. Accordingly,

educational leaders must ensure that reforms are perceived as structured and manageable challenges that foster sustained innovation rather than as overwhelming demands.

Second, schools should actively facilitate teachers' job crafting behaviors, as these behaviors constitute a critical mechanism through which reform pressures can be converted into innovative teaching practices. Although educational change may initially elicit positive responses from teachers, it can also exert negative effects through alternative pathways, underscoring the importance of job crafting in mitigating potential adverse outcomes. School leaders can foster such behaviors by creating organizational conditions that allow teachers to adjust and redesign their work, including granting autonomy in curriculum implementation, encouraging experimentation with novel instructional methods, and supporting collaborative lesson design through professional learning communities (Wrzesniewski & Dutton, 2001; Bakker & Demerouti, 2017). By enabling teachers to reshape their tasks and pedagogical strategies, schools can transform reform-induced pressures into sustained opportunities for instructional innovation.

Third, the findings underscore the nuanced role of relational leadership during periods of intensive educational reform. While relational leadership generally fosters supportive work environments, the results indicate that excessively high levels may attenuate the positive relationship between change fatigue and teachers' innovative behaviours. Specifically, when relational leadership is moderate, teachers may respond to reform-related pressures by proactively adjusting their instructional practices and adopting innovative teaching approaches. However, overly strong relational leadership can create an environment of excessive support that diminishes the pressure-driven motivation necessary for teachers to pursue adaptive and creative solutions. These findings suggest that relational leadership should be exercised with calibrated restraint: school leaders should cultivate trust, open communication, and supportive relationships, while simultaneously preserving organisational procedures, autonomy, and structural integrity. By maintaining this balance, leaders can encourage teachers to explore innovative instructional practices collaboratively without compromising the sense of challenge and professional initiative essential to sustained organisational innovation.

Limitations and Future Research

Although this study offers important theoretical and practical contributions, several limitations should be acknowledged and can inform directions for future research. First, the cross-sectional design limits the ability to establish causal relationships among change fatigue, job crafting, and teaching innovation behaviour because teachers' responses to reform-related pressures may evolve over time as accumulated experience and adaptive strategies emerge. Future studies employing longitudinal designs are needed to capture these dynamic processes and provide stronger evidence for causality. Second, the exclusive reliance on self-reported measures may introduce potential biases, including common method variance. Future research can enhance the robustness and validity of findings by incorporating multiple data sources, such as school leaders' evaluations, peer assessments, and classroom observations. Third, the study's contextual setting within the Chinese educational system, characterised by frequent policy reforms and collectivist cultural values, may influence how teachers perceive and respond to change fatigue. Replication in other educational systems and cultural contexts is necessary to determine the generalizability of the findings. What's more, some effect sizes in this study are extremely small in numerical terms. For instance, the indirect effect is approximately 0.007; the interaction coefficient is -0.015. Even when the sample size N is 4,078, these small effects can still be statistically significant. These findings are exploratory and assumption-generating. Future research should identify more powerful predictors of teaching outcomes. Finally, although this study focuses on job crafting as a mediating mechanism and relational leadership as a contextual moderator, other individual characteristics such as resilience, professional identity, and growth mindset, as well as organisational factors including school

climate, professional learning communities, and institutional support, may also shape teachers' innovative behaviours. Future research should incorporate these variables to develop a more comprehensive understanding of how educators adapt to ongoing educational reforms.

Conclusion

This study explores how change fatigue influences teachers' teaching innovation behavior in the context of continuous educational reform. The findings reveal that change fatigue is positively associated with teaching innovation behavior, suggesting that reform-related pressure may stimulate adaptive responses rather than simply suppressing innovation. However, the observed effect sizes are small to modest, indicating that the practical significance of this relationship should be interpreted with caution, and the positive association may not imply a strong or uniform effect across all teachers. The results further show that job crafting mediates this relationship, indicating that teachers respond to change fatigue by proactively adjusting their work tasks and teaching strategies, thereby promoting innovative instructional practices. Nevertheless, the operationalisation of change fatigue — captured primarily via self-reported perceived exhaustion — may not fully capture its multidimensional nature (e.g., cognitive, emotional, and behavioural components), and future research should employ more refined measures. In addition, relational leadership moderates the relationship between change fatigue and teaching innovation behaviour, highlighting the importance of leadership context in shaping how teachers respond to reform-related demands. By integrating change fatigue, job crafting, and relational leadership into a moderated mediation framework, this study provides a more comprehensive understanding of how teachers sustain innovative behaviour amid ongoing organisational change. These findings contribute to the literature on teacher innovation and offer insights into managing educational reforms to support sustainable innovation in schools. Given the cross-sectional design and the acknowledged limitations, the results should be considered preliminary; future studies using longitudinal or experimental designs are needed to establish causality and examine the boundary conditions of the observed effects.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The database of this study was derived from the OECD official website, which is <https://www.oecd.org/en/data/datasets/talis-2024-database.html>.

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