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Gain or Loss? The Double-Edged Sword Effect of Challenging Job Demands on Work-Family Gain

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Date: 2022-04-17T22:11:48+00:00

Abstract

Based on Conservation of Resources Theory and Uncertainty Management Theory, and employing a diary study methodology to collect data from 81 participants over 10 working days, this study comprehensively examined the influence of challenging job demands on work-family enrichment from both static and dynamic perspectives by clarifying different attributes of challenging job demands (daily level, average level, day-to-day variation, and fluctuation). The findings indicate that: (1) In the static model, challenging job demands influence work-family enrichment through work focus (gain path) and relaxation (loss path), and in the between-individual average level model, the mediating effect of relaxation is more pronounced; (2) In the dynamic model, both day-to-day variation and fluctuation of challenging job demands reduce employees' work focus and relaxation, thereby decreasing work-family enrichment. Finally, this study discusses practical implications, such as the need for managers to recognize the double-edged sword effect of challenging job demands.

Full Text

Gain or Loss? The Double-Edged Sword Effect of Challenge Demands on Work-Family Enrichment

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Abstract

Drawing on Conservation of Resources (COR) theory and Uncertainty Management theory, this study employs a diary research methodology to collect data from 81 employees over 10 working days. By clarifying distinct attributes of challenge demands—daily level, average level, daily shifts, and variability—we comprehensively examine the effects of challenge demands on work-family enrichment from both static and dynamic perspectives. The findings reveal that: (1) In the static model, challenge demands influence work-family enrichment through both work absorption (gain path) and relaxation (loss path), with the mediating effect of relaxation being more pronounced at the between-person average level; (2) In the dynamic model, both daily shifts and variability in challenge demands reduce work-family enrichment by diminishing employee work absorption and relaxation. Finally, we discuss practical implications, emphasizing that managers should recognize the dual nature of challenge demands.

Keywords: challenge demand, work-family enrichment, daily shift directionality, variability, diary study

1. Introduction

Work demands have become a critical factor affecting employees' work and family lives, attracting widespread attention in contemporary society (Cavanaugh et al., 2000). According to the challenge-hindrance stressor framework, work demands are categorized into challenge demands and hindrance demands (LePine et al., 2005). Challenge demands help employees acquire new knowledge and promote personal growth, whereas hindrance demands represent obstacles that are difficult to overcome and yield no benefits or returns (Rodell & Judge, 2009). Previous research has established that hindrance demands negatively affect work-family relationships (Culbertson et al., 2009), while challenge demands can enhance satisfaction (Webster et al., 2010), strengthen work motivation (Gardner, 2012), and increase innovative behavior (Sun et al., 2018).

Although scholars agree on the detrimental effects of hindrance demands, the impact of challenge demands is considerably more complex (LePine et al., 2005). Halbesleben et al. (2014) redefined "resources" in COR theory as "anything that individuals perceive as helpful in achieving their goals," including career development opportunities, self-efficacy, and job autonomy. Because challenge demands are inherently "challenging," they can provide individuals with growth and development opportunities; however, they remain task-related work demands that require employees to mobilize personal resources to complete their tasks. Consequently, we posit that challenge demands exert a more nuanced, dual-edged effect on work-family relationships rather than a simple, direct impact like hindrance demands.

Furthermore, examining challenge demands' effect on work-family enrichment through a single-path perspective is incomplete. We propose that this dual-edged effect operates through both a "gain path" and a "loss path." On one hand, the challenging nature of these demands can motivate employees to invest more effort in their work, thereby increasing work-family enrichment. On the other hand, as a form of work stress, challenge demands consume individual resources, making it difficult for employees to relax. Experiences of resource depletion in the work domain hinder employees' ability to enhance quality of life in the family domain, thereby reducing work-family enrichment (Kang & Peng, 2019). However, these two mediating mechanisms have typically been tested in isolation, obscuring their joint operation. Therefore, based on COR theory, it is essential to investigate which of these two paths exerts stronger influence.

Moreover, Halbesleben et al. (2014) emphasize that researchers should adopt an "episodic approach" to examine how within-person resource fluctuations affect individuals themselves, rather than focusing solely on between-person differences in resources. This is particularly relevant because in actual work settings, two scenarios commonly occur: different employees experience varying levels of challenge demands, and the same employee experiences fluctuations in challenge demands across different workdays. Therefore, it is necessary to construct both between-person average-level models and within-person daily-level models to explore the dual-path effects of challenge demands on work-family enrichment.

The aforementioned average-level and daily-level models examine the impact of challenge demands on work-family enrichment from a "static" perspective, focusing on different "levels" of demands both within and between individuals. However, Halbesleben et al. (2014) argue that COR theory should be viewed as a dynamic process, and researchers should investigate how resource fluctuations affect individuals. Consequently, examining the dynamic effects of challenge demands on work-family enrichment is more conducive to capturing the evolving nature of this relationship. Specifically, at the within-person level, analyzing the "dynamic change" process of challenge demands—namely, the directionality of daily shifts between consecutive days—helps clarify how day-to-day changes affect work-family enrichment. More importantly, at the between-person level, employees require greater psychological resources to cope with highly variable challenge demands compared to those that remain relatively stable. Thus, the "variability" of challenge demands over time may have more detrimental long-term effects on chronic work-family enrichment. Based on these considerations, it is essential to comprehensively and deeply examine the dynamic effects of challenge demands on work-family enrichment.

In summary, this study aims to reveal the underlying mechanisms linking challenge demands and work-family enrichment from integrated static and dynamic perspectives. In the static model, we analyze the dual-edged effects of challenge demands on work-family enrichment through different paths and compare the relative strength of these mediating mechanisms. In the dynamic model, we

examine how temporal changes in challenge demands—specifically, daily shift directionality and variability—influence work-family enrichment. Overall, this study seeks to establish static models (daily-level and average-level) and dynamic models (daily shift and variability) at both within-person and between-person levels, thereby providing a multi-perspective, multi-level, and comprehensive examination of challenge demands' effects on work-family enrichment. This approach deepens both researchers' and managers' understanding of how challenge demands operate across work and family domains.

1.1.1 Gain Path: The Mediating Role of Work Absorption from a Resource Gain Perspective

Within-Person Daily-Level Model. Work absorption, as a core dimension of work engagement, represents a positive motivational reaction when employees respond to work demands (Bakker, 2009; Xanthopoulou et al., 2009). Kühnel et al. (2012) argue that work engagement has a "momentary" quality that fluctuates within individuals on a daily basis. According to COR theory, individuals tend to invest more resources to protect existing resources (Hobfoll, 1989). Challenge demands can be viewed as work resources that help employees acquire knowledge, skills, and confidence, motivating them to invest greater work absorption to meet these challenges and thereby gain additional resources. Specifically, higher daily challenge demands indicate more challenging tasks on a given day, making the work' s meaning and content more attractive to employees and eliciting positive behavioral responses. This leads employees to devote themselves wholeheartedly to their work, motivating them to complete tasks efficiently (Butler et al., 2005). Efficient task completion on a given day enhances employees' knowledge and skills while boosting positive psychological states such as self-efficacy and self-esteem, which help them better manage family affairs (Greenhaus & Powell, 2006) and promote work-to-family enrichment.

H1a: Daily work absorption mediates the relationship between daily challenge demands and daily work-family enrichment.

Between-Person Average-Level Model. Over time, the positive within-person effects of challenge demands on work-family enrichment can extend to the chronic level, influencing long-term work-family enrichment (Sun et al., 2018). At the between-person level, the average level of challenge demands represents employees' chronic perceptions of challenge demands over a period. According to COR theory' s "resource gain spiral" principle, "initial resource gains facilitate further resource gains, but this spiral develops relatively slowly and requires a process" (Halbesleben & Wheeler, 2015). Therefore, the accumulation of positive effects of challenge demands over the long term can enhance employees' sense of work meaning. Simultaneously, the "challenging" nature of work can increase employees' sense of accomplishment and overall control over their work in the long run, making them more absorbed. Moreover, challenge demands provide growth and development opportunities over time, improving employees' overall problem-solving abilities, and the acquired skills can directly help them resolve

family issues, thereby enhancing work-family enrichment (Van den Broeck et al., 2010; Wayne et al., 2007).

H1b: Chronic work absorption mediates the relationship between the average level of challenge demands and chronic work-family enrichment.

1.1.2 Loss Path: The Mediating Role of Relaxation from a Resource Loss Perspective

Within-Person Daily-Level Model. Work demands consume individuals' resources (such as time and energy), thereby hindering their investment and performance in the family domain. According to COR theory, when resources are threatened, individuals strive to maintain and protect existing resources to prevent loss (Hobfoll, 1989). Kühnel et al. (2012) argue that the positive effects of resources also depend on whether employees can engage in activities that facilitate recovery. Relaxation, as a crucial manifestation of resource recovery, represents a recovery response process when employees cope with work demands (Bennett et al., 2016). Without adequate recovery, the positive effects of resources are significantly diminished. Specifically, coping with challenge demands requires emotional and cognitive resources (LePine et al., 2005). Within a single day, higher challenge demands occupy more of an individual' s time and energy, increasing fatigue and resource depletion (Song et al., 2011) and making it difficult for employees to achieve relaxation. Consequently, daily challenge demands reduce employees' daily relaxation. In a state of resource loss, individuals lack sufficient resources to improve their role performance in the family domain, thereby reducing work-family enrichment.

H2a: Daily relaxation mediates the relationship between daily challenge demands and daily work-family enrichment.

Between-Person Average-Level Model. From a long-term perspective, maintaining high average levels of challenge demands over time leads employees to continuously expend time and energy to overcome these demands, thereby chronically reducing relaxation (Sonnentag & Fritz, 2007). Over time, low relaxation in the work domain keeps employees in a state of high tension, causing exhaustion (Bennett et al., 2018) and preventing timely replenishment of depleted resources (Hobfoll, 2011). This negative effect also spills over to reduce chronic work-family enrichment.

H2b: Chronic relaxation mediates the relationship between the average level of challenge demands and chronic work-family enrichment.

1.1.3 Comparison of Mediating Paths

Based on the above discussion, we argue that challenge demands exert dual-edged effects on work-family enrichment through "gain" and "loss" paths. The gain path, mediated by work absorption, represents a resource gain process, whereas the loss path, mediated by relaxation, represents a resource depletion

process. However, the strength of these two mediating paths differs between daily-level and average-level models. We propose that in the within-person daily-level model, the mediating effect of daily work absorption is stronger than that of daily relaxation, while in the between-person average-level model, the mediating effect of chronic relaxation is stronger than that of chronic work absorption.

Within-Person Daily-Level Model. According to LePine et al. (2005), motivation-related reactions represent individuals' initial appraisals of work demands (Perrewé & Zellars, 1999). Increased daily work absorption constitutes an instantaneous motivational response to daily challenge demands, more directly influencing daily work-family enrichment. COR theory suggests that individuals tend to invest more resources to protect existing resources (Hobfoll, 1989). Therefore, in the daily-level model, when faced with daily challenge demands, employees are inclined to invest more time and energy to meet these challenges. In other words, the positive effects stemming from the "challenging" nature of these demands outweigh the negative effects associated with their nature as work demands. Consequently, when considering both mechanisms, the positive effects are more likely to dominate in the relationship between daily challenge demands and daily work-family enrichment.

H3a: The indirect effect of daily work absorption in the relationship between daily challenge demands and daily work-family enrichment is stronger than that of daily relaxation.

Between-Person Average-Level Model. Based on COR theory's important principle—that resource gain spirals develop relatively slowly and are weaker in both strength and speed compared to resource loss (Halbesleben & Wheeler, 2015)—the loss spiral effects of challenge demands outweigh the gain spiral effects over the long term. While challenge demands can motivate employees in the short term, they still consume resources, and this resource depletion accumulates over time, becoming stronger than the resource gain process (Halbesleben et al., 2014). In the long run, the positive effects of challenge demands cannot offset prolonged resource depletion, thereby reducing chronic work-family enrichment.

H3b: The mediating effect of chronic relaxation in the relationship between the average level of challenge demands and chronic work-family enrichment is stronger than that of chronic work absorption.

Figure 1 presents our static research model.

1.2 Dynamic Model

In the static model, we used COR theory to explain the dual-edged effects of challenge demands on work-family enrichment. However, both resource gain and resource loss represent changes in resources (Airila et al., 2014; Shipp & Cole, 2015). Bordia et al. (2004) and Sun et al. (2021) emphasize that changes in work role-related factors create uncertainty for employees. Based on Uncertainty

Management theory, van den Bos (2001) argues that uncertain events affect employees' psychology, attitudes, and behaviors. In this study, we conceptualize challenge demands as a work resource whose fluctuations create uncertainty about resource gain or loss, subsequently influencing employees' motivational and recovery responses as well as work-family enrichment.

1.2.1 Within-Person Daily Shift Model

Employees' perceptions of challenge demands derive from specific work tasks and procedures each day. Because temporary tasks or new work procedures may arise relatively unexpectedly, challenge demands can be high on one day and low on another (Prem et al., 2017). However, existing literature has paid limited attention to within-person fluctuations (Wang et al., 2019). This study examines daily shifts in challenge demands to investigate whether the direction of change from day t-1 to day t (daily shifts directionality) affects day t' s work-family enrichment. Daily shifts in challenge demands can occur in two directions—decreases or increases relative to the previous day. When challenge demands decrease from one day to the next, the work becomes progressively less challenging. On one hand, this makes it easier for employees to focus on their current tasks; on the other hand, compared to the previous day' s high demands, employees conserve time and energy, experience reduced mental fatigue, and find it easier to relax, which helps them handle family matters and enhances work-to-family enrichment (Li et al., 2015). Conversely, when challenge demands increase from day to day, this day-to-day change creates psychological uncertainty, making the demands' effects more salient and requiring greater resource investment. This reduces work absorption, hinders relaxation, leads to resource depletion, and prevents improvements in same-day family domain role performance.

Research Question 1a: At the within-person level, the directionality of daily shifts in challenge demands is negatively related to daily work absorption and daily relaxation; that is, when daily shifts in challenge demands increase, employees' daily work absorption and relaxation decrease, and vice versa.

Research Question 1b: At the within-person level, daily work absorption mediates the relationship between the directionality of daily shifts in challenge demands and daily work-family enrichment.

Research Question 1c: At the within-person level, daily relaxation mediates the relationship between the directionality of daily shifts in challenge demands and daily work-family enrichment.

1.2.2 Between-Person Variability Model

We argue that investigating the overall variability of challenge demands has important theoretical and practical significance. Over a given period, even when overall mean levels are equivalent, the magnitude of variation in challenge demands differs. Compared to stable challenge demands, employees must expend

more resources to cope with highly variable demands. We define variability of challenge demands as the fluctuating magnitude of demands over time. When challenge demands change inconsistently over time, this unpredictability prevents individuals from forming a stable understanding of these demands, creating psychological strain (Wang et al., 2019). For example, Matta et al. (2017) found that variability in interpersonal justice created greater physiological stress and emotional distress than consistently low justice. Therefore, over time, this psychological pressure increases employees' perceptions of work demands, making it difficult for them to focus on work or relax, impairing family domain role performance, and hindering work-to-family enrichment.

Research Question 2a: At the between-person level, variability in challenge demands negatively affects chronic work absorption and chronic relaxation.

Research Question 2b: At the between-person level, chronic work absorption mediates the relationship between variability in challenge demands and chronic work-family enrichment.

Research Question 2c: At the between-person level, chronic relaxation mediates the relationship between variability in challenge demands and chronic work-family enrichment.

Figure 2 presents our dynamic research model.

2.1 Sample and Data Collection Procedure

This study employed a diary research methodology to capture dynamic changes in daily challenge demands, work absorption, relaxation, and work-family enrichment over time. We distributed questionnaires through social media platforms, encouraging interested employees to participate and share the survey information. All participants were full-time employees working an average of 40 hours per week, representing diverse occupations including university faculty, finance, manufacturing, and internet technology. To ensure successful participation, we provided approximately 100 RMB worth of gifts as compensation.

Data collection occurred in two phases. Phase one collected between-person control variables during the weekend of Week 1, including demographic information. Phase two involved daily log data collection during Weeks 2 and 3 on workdays. Researchers collected daily data between 4:00 p.m. and 10:00 p.m. each workday to ensure participants had adequate work and family experiences to respond meaningfully. We distributed 105 questionnaires and recovered 99 valid responses (94.29% response rate).

To test the relationships between challenge demands and work-family enrichment across four models, we obtained up to 8 days of valid daily shift data per participant. After excluding participants who responded for fewer than 2 consecutive days or selected the same answer for more than 5 items, the final sample comprised 81 individuals (between-person level) and 645 valid data points (within-person level). The sample was 40.80% male, with an average

age of 32.92 years, average tenure of 6.98 years, 76.60% married, 86.70% with bachelor' s degree or higher, and 52.10% with children.

2.2 Measures

All scales used a 5-point Likert format (1 = "strongly disagree," 5 = "strongly agree").

Daily Challenge Demands. We used the 4-item abbreviated scale from Rodell and Judge (2009). A sample item was "Today, I needed to use high-level skills to accomplish my work." Cronbach' s $\alpha = 0.84$.

Daily Shifts in Challenge Demands. Following Wang et al. (2019), we operationalized daily shifts as the residual value obtained by regressing day t' s challenge demands on day t-1' s challenge demands.

Average Level of Challenge Demands. Following Wang et al. (2013), we calculated the mean of challenge demands across 10 workdays as the average-level observation.

Variability of Challenge Demands. Following Matta et al. (2017) and Wang et al. (2019), we used the standard deviation of challenge demands across 10 workdays as the variability observation.

Daily Work Absorption. We used the 5-item scale from Rothbard (2001). A sample item was "Today, nothing could distract me while I was working." Cronbach' s $\alpha = 0.72$.

Daily Relaxation. We used the 4-item relaxation subscale from Sonnentag and Fritz' s (2007) Recovery Experience Questionnaire. A sample item was "Today, after work, I spent time relaxing." Cronbach' s $\alpha = 0.90$.

Daily Work-Family Enrichment. We used the 4-item scale from Wayne et al. (2004). A sample item was "Today, the things I did at work helped me deal with personal and practical issues at home." Cronbach' s $\alpha = 0.89$.

Control Variables. Previous research indicates that work-family enrichment is affected by gender, marital status, and spouse' s work status (Lapierre et al., 2018). Therefore, we included these variables as controls in our models.

2.3 Statistical Analysis

Given the multilevel nested data structure (daily data points nested within individuals), we first conducted confirmatory factor analysis using Mplus 7.0. Second, we performed descriptive statistical analysis using SPSS 24.0. Finally, we conducted multilevel path analysis using Mplus 7.0. For mediation effects, we used R software to test significance with Monte Carlo simulations based on 95% bias-corrected confidence intervals (Selig et al., 2012).

3.1 Confirmatory Factor Analysis

Following Sonnentag et al.' s (2012) approach, we compared a four-factor model (challenge demands, work absorption, relaxation, work-family enrichment) with alternative models. The four-factor model demonstrated good fit (^{2} = 285.23, df = 96, ^{2}/df = 2.97, CFI = 0.94, TLI = 0.93, RMSEA = 0.05, SRMR = 0.06) and was superior to all alternative models. The confirmatory factor analysis results are presented in Table 1.

Table 1. Confirmatory Factor Analysis Results

Model	^{2}	df	^{2}/df	Δdf	CFI	TLI	RMSEA	SRMR
Four-factor model: CD, WA, R, WFE	285.23	96	2.97	—	0.94	0.93	0.05	0.06
Three-factor model: CD, WA+R, WFE								
Two-factor model: CD+WA+R, WFE								
One-factor model: CD+WA+R+WFE								

Note: N (between-person) = 81, N (within-person) = 645.

3.2 Descriptive Statistics

Descriptive statistics and correlation matrices are presented in Tables 2 and 3. Before hypothesis testing, we examined the variance decomposition of challenge demands, work absorption, relaxation, and work-family enrichment at both within-person and between-person levels. As shown in Table 4, all variables exhibited significant variability at both levels.

Table 2. Within-Person Descriptive Statistics and Correlation Matrix

Variable	1	2	3	4
1. Daily challenge demands	–			
2. Daily work absorption	0.46**	–		
3. Daily relaxation	-0.24**	0.32**	–	
4. Daily work-family enrichment	0.15**	0.58**	0.19**	–

Note: N (between-person) = 81, N (within-person) = 645. p < 0.05. **p < 0.01.*

Table 3. Between-Person Descriptive Statistics and Correlation Matrix

Variable	1	2	3	4
1. Average challenge demands	–			
2. Chronic work absorption	0.10**	–		
3. Chronic relaxation	-0.23**	0.37**	–	
4. Chronic work-family enrichment	-0.02	0.43**	0.56**	–

Note: N (between-person) = 81, N (within-person) = 645. p < 0.05. **p < 0.01.*

Table 4. Percentage of Between-Person Variance in Daily Variables

Variable	Within-person variance	Between-person variance	% Between-person variance
Challenge demands	0.33***	0.33**	50.00%
Work absorption	0.32***	0.14***	30.43%
Relaxation	0.35***	0.23***	39.66%
Work-family enrichment	0.31***	0.35***	53.03%

Note: N (between-person) = 81, N (within-person) = 645. Percentage = between-person variance / (within-person variance + between-person variance) × 100%. p < 0.05. **p < 0.01.** *p < 0.001.*

3.3 Hypothesis Testing

We used multilevel path analysis to test within-person and between-person effects (Preacher et al., 2010). Table 5 presents path coefficients, while Tables 6 and 7 show indirect effects. Figures 3 and 4 illustrate the model paths.

Static Model. (1) *Gain path.* H1a proposed that daily work absorption mediates the relationship between daily challenge demands and daily work-family enrichment. Results in Table 5 and Figure 3 show that daily challenge demands positively predicted daily work absorption (γ = 0.38, p < 0.001), and daily work absorption positively predicted daily work-family enrichment (γ = 0.15, p = 0.012). Table 6 indicates the indirect effect was 0.06, with a 95% Monte Carlo CI [0.005, 0.110] excluding zero. Thus, H1a was supported. H1b proposed that chronic work absorption mediates the relationship between average challenge demands and chronic work-family enrichment. Table 5 and Figure 3 show that average challenge demands positively predicted chronic work absorption (γ = 0.25, p = 0.003), but chronic work absorption did not significantly predict chronic work-family enrichment (γ = 0.02, p = 0.914). The indirect effect was 0.01, with 95% CI [-0.019, 0.031] including zero. Therefore, H1b was not supported.

(2) *Loss path.* H2a proposed that daily relaxation mediates the relationship between daily challenge demands and daily work-family enrichment. Table 5 and Figure 3 show that daily challenge demands negatively predicted daily relaxation (γ = -0.15, p = 0.041), and daily relaxation positively predicted daily work-family enrichment (γ = 0.42, p < 0.001). The indirect effect was -0.05, with 95% CI [-0.100, -0.007] excluding zero. Thus, H2a was supported. H2b proposed that chronic relaxation mediates the relationship between average challenge demands and chronic work-family enrichment. Average challenge demands negatively predicted chronic relaxation (γ = -0.16, p = 0.037), and chronic relaxation positively predicted chronic work-family enrichment (γ = 0.56, p < 0.001). The indirect effect was -0.09, with 95% CI [-0.121, -0.061] excluding zero. Therefore, H2b was supported.

(3) *Mediation comparison.* H3a proposed that in the daily-level model, the mediating effect of daily work absorption is stronger than that of daily relaxation. Table 6 shows the indirect effect of daily work absorption was 0.06, while daily relaxation was -0.05. The difference was not significant (γ = 0.01), with 95% CI [-0.079, 0.066] including zero. Thus, H3a was not supported. H3b proposed that in the average-level model, the mediating effect of chronic relaxation is stronger than that of chronic work absorption. Table 6 shows a significant difference between the gain and loss paths (γ = 0.09), with 95% CI [0.045, 0.125] excluding zero. Combined with the non-significant H1b and significant H2b, H3b was supported.

Dynamic Model. (1) *Within-person daily shift model.* Research Question 1a proposed that the directionality of daily shifts in challenge demands is negatively

related to daily work absorption and daily relaxation. Table 5 and Figure 4 show that daily shift directionality negatively predicted daily work absorption (γ = -0.27, p < 0.001) and daily relaxation (γ = -0.17, p = 0.019). Thus, Research Question 1a was supported. Research Questions 1b and 1c proposed mediation by daily work absorption and daily relaxation. Table 5 shows daily work absorption positively predicted daily work-family enrichment (γ = 0.15, p = 0.012), and daily relaxation positively predicted daily work-family enrichment (γ = 0.42, p < 0.001). Table 7 shows indirect effects of 0.03 and -0.07, with 95% CIs [-0.010, 0.077] and [-0.129, -0.012], respectively. Therefore, Research Question 1b was not supported, while Research Question 1c was supported.

(2) *Between-person variability model.* Research Question 2a proposed that variability in challenge demands negatively affects chronic work absorption and chronic relaxation. Table 5 and Figure 4 show that variability negatively predicted chronic work absorption (γ = -0.35, p = 0.045) and chronic relaxation (γ = -0.54, p = 0.022). Thus, Research Question 2a was supported. Research Questions 2b and 2c proposed mediation by chronic work absorption and chronic relaxation. Table 5 shows chronic work absorption did not predict chronic work-family enrichment (γ = 0.02, p = 0.914), while chronic relaxation positively predicted chronic work-family enrichment (γ = 0.56, p < 0.001). Table 7 shows indirect effects of -0.01 and -0.29, with 95% CIs [-0.042, 0.026] and [-0.396, -0.200], respectively. Therefore, Research Question 2b was not supported, while Research Question 2c was supported.

Table 5. Multilevel Path Analysis Results for Challenge Demands and Work-Family Enrichment

Predictor	Work Absorption γ (SE)	Relaxation γ (SE)	Work-Family Enrichment γ (SE)
Between-person			
Average challenge demands	0.25** (0.08)	-0.16* (0.07)	
Variability of challenge demands	-0.35* (0.18)	-0.54* (0.24)	
Chronic work absorption			0.02 (0.14)
Chronic relaxation			0.56*** (0.09)

Predictor	Work Absorption γ (SE)	Relaxation γ (SE)	Work-Family Enrichment γ (SE)
Within-person			
Daily challenge demands	0.38*** (0.07)	-0.15* (0.08)	
Daily shift directionality	-0.27*** (0.07)	-0.17* (0.07)	
Daily work absorption			0.15* (0.06)
Daily relaxation			0.42*** (0.05)
pseudo-R^2	13.61%	26.22%	14.30%

Note: N (between-person) = 81, N (within-person) = 645. Unstandardized coefficients reported. $p < 0.05$. **$p < 0.01$.** *$p < 0.001$.*

Table 6. Comparison of Mediation Effects in Static Model

Mediation Path	Indirect Effect	Monte Carlo 95% CI
Daily CD → Daily WA → Daily WFE	0.06*	[0.005, 0.110]
Daily CD → Daily R → Daily WFE	-0.05*	[-0.100, -0.007]
Average CD → Chronic WA → Chronic WFE	0.01	[-0.019, 0.031]
Average CD → Chronic R → Chronic WFE	-0.09***	[-0.121, -0.061]
Daily-level: WA vs. R	0.01	[-0.079, 0.066]
Average-level: WA vs. R	0.09***	[0.045, 0.125]

Note: N (between-person) = 81, N (within-person) = 645. $p < 0.05$. **$p < 0.01$.** *$p < 0.001$.*

Table 7. Mediation Effects in Dynamic Model

Mediation Path	Indirect Effect	Monte Carlo 95% CI
Daily shift → Daily WA → Daily WFE	-0.01	[-0.010, 0.077]
Daily shift → Daily R → Daily WFE	-0.07*	[-0.129, -0.012]
Variability → Chronic WA → Chronic WFE	-0.01	[-0.042, 0.026]
Variability → Chronic R → Chronic WFE	-0.29***	[-0.396, -0.200]

Note: N (between-person) = 81, N (within-person) = 645. $p < 0.05$. **$p < 0.01$.** *$p < 0.001$.*

Figure 3. Static Model Path Coefficients

Average-level model: Challenge demands → Work absorption (0.25**)** → **Chronic WFE**
Daily-level model: Challenge demands → Work absorption (0.38*)* → *Daily WFE*
Average-level model: Challenge demands → Relaxation (-0.16) → Chronic WFE
Daily-level model: Challenge demands → Relaxation (-0.15*) → Daily WFE

Figure 4. Dynamic Model Path Coefficients

Variability model: Challenge demands → Work absorption (-0.35*)* → *Chronic WFE*
*Daily shift model: Challenge demands → Work absorption (-0.27***) → Daily WFE
Variability model: Challenge demands → Relaxation (-0.54*)* → *Chronic WFE*
Daily shift model: Challenge demands → Relaxation (-0.17) → Daily WFE

4.1 Research Conclusions

Based on COR theory and Uncertainty Management theory, this study examined the relationship between challenge demands and work-family enrichment from static and dynamic perspectives. In the static model, we verified the dual-edged sword effect of challenge demands and compared the gain and loss paths. In the dynamic model, we investigated the effects of daily shift directionality and chronic variability on work-family enrichment. This study provides a comprehensive examination of challenge demands' effects from multiple perspectives.

The findings reveal: (1) In the static model, challenge demands exert dual-edged effects on work-family enrichment. At the daily level (within-person), employees' daily challenge demands enhance work-family enrichment through the gain path while reducing it through the loss path. At the average level (between-person), challenge demands increase chronic work absorption and reduce chronic

relaxation, but only the reduction in chronic relaxation significantly decreases chronic work-family enrichment. (2) In the dynamic model, at the daily shift level (within-person), the directionality of daily shifts negatively affects subsequent day' s work absorption and relaxation, with only relaxation showing significant mediation. At the variability level (between-person), variability in challenge demands reduces both chronic work absorption and chronic relaxation, with only chronic relaxation showing significant mediation.

These results provide new insights: First, they challenge the traditional view of challenge demands as purely "benign" work requirements. Challenge demands can increase work absorption and promote growth, positively affecting work-family enrichment, while simultaneously inhibiting relaxation and negatively affecting work-family enrichment. At the average level, the mediating effect of chronic relaxation is stronger than that of chronic work absorption. Second, by introducing concepts of daily shift directionality and variability, this study addresses the limitation of previous static approaches and highlights that temporal changes in challenge demands are important factors influencing employee states and behaviors, providing a more comprehensive understanding of challenge demands' effects.

4.2 Theoretical Contributions

First, this study extends COR theory' s application to challenge demands. Previous research primarily examined between-person effects of average challenge demand levels (e.g., Webster et al., 2010), neglecting within-person daily variations. Halbesleben et al. (2014) advocated for an episodic approach to examine how within-person resource fluctuations affect individuals. Applying this expanded COR perspective, our study distinguishes between daily challenge demands (within-person level) and average challenge demands (between-person level), capturing both within- and between-person differences and enriching the levels of analysis in challenge demand research.

Second, this study challenges the conventional view of challenge demands as "benign"stressors. Previous research has focused primarily on positive outcomes, such as improved performance (LePine et al., 2004) and well-being (Tadić et al., 2015), while neglecting their nature as work stressors that produce negative effects. By integrating COR theory' s resource gain and loss perspectives and examining both work absorption and relaxation as mediators, we reveal the black box of challenge demands' complex relationship with work-family enrichment, providing a comprehensive theoretical explanation.

Third, regarding the competing effects of resource gain and loss, existing theoretical explanations are insufficient. Our comparison of mediation strengths yields intriguing findings. In the within-person daily model, both daily work absorption and daily relaxation show significant mediation, but their difference is not significant. In contrast, at the between-person average level, challenge demands affect work-family enrichment only through reduced relaxation. This

suggests that when considering competing gain and loss paths, time dimension matters: both positive and negative effects operate in the short term, but the loss path becomes dominant over time. Thus, our study extends understanding of challenge demands' mechanisms by incorporating temporal dimensions.

Moreover, previous research has examined challenge demands' effects only from a static perspective, which cannot capture the full picture. By introducing the concepts of "daily shift directionality" and "variability," this study truly examines challenge demands from a dynamic perspective. By modeling daily shifts and variability, we further explore how changes in challenge demands affect work-family enrichment, enhancing theoretical understanding of their temporal relationship.

In summary, this study responds to Demerouti and Bakker' s (2011) call for research on frequently occurring, dynamically fluctuating work demands. Through daily-level, average-level, daily shift, and variability models, we provide a comprehensive, in-depth, and systematic examination of challenge demands' effects on work-family enrichment, enriching the theoretical foundation.

4.3 Practical Implications

Our findings can help managers implement more scientific stress management practices. First, managers should fully recognize the dual-edged nature of challenge demands, leveraging their motivational effects while acknowledging their negative consequences. When assigning challenging work, managers should provide necessary support. Specifically, they should design challenging tasks to enhance work absorption and goal achievement while fostering a "positive coping, happy working" mindset and providing facilities (e.g., cafés, gyms) that enable relaxation. Both conceptual and instrumental support help employees cope with challenge demands.

Second, comparing daily and average-level models reveals that challenge demands promote work-family enrichment through increased work absorption in the short term, but over time, only reduced relaxation significantly decreases enrichment. This suggests that the accumulated negative effects of resource depletion may override short-term positive effects. Therefore, managers should address the long-term negative impacts of high challenge demands by providing timely family-supportive supervision and training to enhance employees' capabilities, thereby promoting work-to-family enrichment.

Third, results show that both daily shift directionality and chronic variability negatively affect work absorption, relaxation, and work-family enrichment. Thus, managers should not only recognize the dual-edged effects but also understand that fluctuations increase employees'perceived stress and have detrimental effects. Managers should control the magnitude of variation, maintaining relatively stable challenge demand levels.

In conclusion, combining static dual-edged effects with dynamic negative effects of fluctuations, we argue that managers should design work to activate the positive effects of challenge while minimizing negative consequences and maintaining stability. This approach maximizes short-term benefits while helping employees cope effectively in the long term.

4.4 Limitations and Future Directions

Several limitations warrant attention. First, because all variables involved subjective experiences and were measured simultaneously each day, common method bias may exist. Following Podsakoff et al.' s (2003) recommendations, we assured anonymity and confidentiality, separated variable items in the questionnaire, and used brief measures with repeated assessments over two weeks to reduce bias (Foo et al., 2009; Tims et al., 2014). Future research should collect multi-source data and implement time-lagged diary designs to enhance validity.

Second, although we examined cumulative effects of average challenge demand levels over time, using the mean of 10 workdays to define chronic variables may involve measurement error. Following Podsakoff et al.' s (2003), we separately measured between- and within-person variables and conducted pre-tests to ensure between-person independence. Future studies could extend the measurement period to better capture chronic effects.

Third, future research should explore boundary conditions and alternative mediation mechanisms. At the between-person level, individual characteristics (e.g., psychological resilience) may influence which path dominates. For instance, employees with greater resilience may be more motivated by challenge demands and more confident in overcoming them (O' Brien & Beehr, 2019). Additionally, marital status may moderate these relationships (Lapierre et al., 2018). Future research should examine why challenge demands affect work-family enrichment differently across marital statuses. Mechanism-wise, future studies could examine psychological states like self-efficacy, intrinsic motivation, emotional exhaustion, and weekend recovery experiences.

Fourth, in the dynamic model, we only examined day-to-day shifts and overall variability, but not longitudinal trends (e.g., gradually increasing, decreasing, or fluctuating patterns). Future research should employ more sophisticated designs (e.g., latent growth modeling) to examine how longitudinal trends affect employees.

Conclusion

Based on COR theory and Uncertainty Management theory, this study comprehensively examined the effects of challenge demands on work-family enrichment by clarifying distinct attributes (daily level, average level, daily shifts, variability). Using two-week diary data from 81 employees, we found that in the static model, challenge demands exert dual-edged effects through gain and loss paths.

In the dynamic model, both daily shift directionality and variability negatively affect work absorption, relaxation, and work-family enrichment, with only relaxation showing significant mediation. In essence, different attributes of challenge demands vividly illustrate the complexity of organizational management and warrant further exploration by organizational behavior researchers.

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