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The Turkish version of the recovery experience questionnaire: a validation and reliability study

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Abstract
The purpose of this study is to validate the Turkish adaptation of the Recovery Experience Questionnaire (REQ-Tur) by examining its psychometric properties. Participants (N=725) from diverse backgrounds responded to the adapted questionnaire. To verify the scale's structural validity, we performed exploratory factor analysis on one half of the sample (N=362) and confirmatory factor analysis on the other half (N=363). Results confirmed that the original four-factor structure including four key recovery experiences—psychological detachment, relaxation, mastery, and control—provided good fit to the data. The REQ-Tur demonstrated strong internal consistency, with Cronbach's alpha coefficients ranging from .78 to .89 across subscales. Further analyses supported the scale's convergent validity. Significant correlations were found between REQ-Tur scores and key job-related and well-being measures, including workload, work engagement, general job stress, and life satisfaction. Measurement invariance testing confirmed that the factor structure remains consistent and REQ-Tur functions similarly for both men and women. Overall, our findings establish the REQ-Tur as a reliable and valid tool for assessing recovery experiences in Turkish-speaking populations, suitable for both research and practical applications in occupational health and organizational settings.

Keywords Recovery experiences · Job stress · Workload · Work engagement · Life satisfaction · REQ

Introduction

Individual wellbeing is strongly affected by psychosocial characteristics of the work environment so much so that, work-related experiences often spill over into personal life. The contemporary work landscape, marked by digitalization, precarious employment, and entrepreneurial work models, provide workers with great flexibility on the one hand, while introducing novel stressors that threaten psychological and professional well-being on the other (Nijp et al., 2016). The boundary between personal and professional life is increasingly more blurred due to the ubiquitous nature of technological developments, leading to the so-called *technological tethering* and exacerbating the negative effects of work-related stress (Nevin & Schieman, 2020; Sonnentag & Kruel, 2006; Zijlstra & Sonnentag, 2006). Amid the challenges of contemporary work-o-sphere, how to effectively design interventions for individuals to maintain adequate levels of mental and physical well-being and to ensure a sustained state of focus, energy as well as engagement becomes a critical topic (Sonnentag et al., 2012). Recovery experiences have lately been identified by organizational psychologists as a crucial means of reducing work-induced stress and enhancing pleasant emotional states (Headrick et al., 2023) with research on work recovery growing tremendously (Sonnentag et al., 2022).

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Research has identified adequate recovery as a key mechanism for mitigating the negative effects of increasingly demanding work conditions (de Bloom et al., 2013). Recovery experiences are episodes of temporary relief from the demands of work that allow individuals to rebuild their resources (Sonnentag, 2015; Sonnentag et al., 2008). These experiences are important for well-being, as they help individuals to restore their physical and psychological resources, and to build resilience against future stressors (Sonnentag et al., 2008). Recovery has been shown to be particularly important for individuals who experience high levels of job demands or who work long hours (Sonnentag & Kruel, 2006). Recovery occurs when the work-related strain decreases and returns to the levels before the stressor. It involves stepping back from work to replenish personal resources and to recover from excessive work demands (Zijlstra & Sonnentag, 2006). Evidence supports that unwinding for the next working day benefits both individuals and organizations, resulting in increased levels of life satisfaction and work engagement (Sonnentag & Fritz, 2007; Strauss-Blasche et al., 2000). Numerous studies have demonstrated the advantages of recovery experiences in enhancing work-related outcomes, including citizenship behaviors and job performance, and in improving health-related variables such as reduced exhaustion and diminishing levels of work-family conflict (Headrick et al., 2023). A meta-analysis of 54 independent samples (Bennett et al., 2018) suggest that recovery poses a crucial work experience for understanding employee well-being and professional functioning. A meta-analysis of 52 clinical and occupational studies revealed that positive recovery expectations appear to be promising as a method to improve work participation and future recovery outcomes (Hayden et al., 2019). Since recovery experiences play a crucial role in enhancing both positive individual and organizational outcomes regarding workplace functioning, it is recommended to develop strategies to guard employees against the adverse results of workplace stress, to promote better recovery experiences, and to create healthier workplaces conducive to recovery. Providing sufficient recovery opportunities could be a relevant strategy for counterbalancing the physical, emotional, and cognitive impacts of work-related resource depletion (de Bloom et al., 2013).

According to the COR theory, job stressors such as workload are negatively related to the experience of recovery (Demerouti et al., 2009). A high workload implies that one must accomplish a large amount of work in a short period of time (Sonnentag & Kruel, 2006). Employees working under excessive stress and heavy workloads report higher recovery needs (Sluiter et al., 2003; Sonnentag & Bayer, 2005). Empirical studies have shown that high workload may lead to several negative effects on relaxation process (Kinnunen et al., 2011; Sluiter et al., 2003; Sonnentag & Fritz, 2007; Sonnentag et al., 2010). Sonnentag and Kruel (2006) examined the relationship between high job strain and people's ability to psychologically disengage from work. They found that people who experienced high workloads throughout the day had more difficulty 'unplugging' from work in the evening. Since high workloads usually force people to take work home with them or at least make it difficult to forget about the demands of work, it might be expected to have a negative effect on recovery. However, workload is not the only stressor in the workplace. Another common organizational phenomenon that negatively affects employees is general job stress. Stress can be defined as a stimulus, a response, or an interaction between the two. Parker and DeCotiis (1983) defined job stress as the feeling of an individual who is required to deviate from normal or self-desired functioning in the workplace because of constraints or demands related to potentially important job-related outcomes. COR theory has implications for understanding work related stress and previous research has shown that recovery experiences play a significant role in coping with general work stress (Hahn et al., 2011; Sonnentag & Kruel, 2006).

Several well-being variables in both organizational and individual contexts can be considered as potential outcomes of recovery experiences, particularly work engagement and life satisfaction. Work engagement is defined as a positive and fulfilling state of mind related to one's work (Schaufeli et al., 2019). While the level of work engagement is generally stable in the long run, Sonnentag et al. (2010) found that it can vary significantly on a daily basis. Empirical research has shown that an elevated level of recovery is positively associated with work engagement (Siltaloppi et al., 2009; Sonnentag et al., 2012). Additionally, as recovery experiences help individuals recover from stress, they will also contribute to individual psychological well-being (Sonnentag & Fritz, 2007). In this context, life satisfaction, defined as an individual's subjective assessment of quality of life could be considered as a positive individual outcome of post-work recovery.

Given the significance of recovery experiences for restoring energy levels, reducing stress, and improving well-being after exposure to stressors or other demands, it is essential to understand the underlying mechanisms and to develop reliable and valid measures to assess them. The Recovery Experiences Questionnaire developed by Sonnentag and Fritz in 2007 is widely used for recovery experience research and has been translated into multiple languages with its track record of accurate measurement capacity.

Within this broader framework, the current study seeks to validate the Turkish version of the Recovery Experience Questionnaire (REQ) as a tool for assessing recovery experiences in the Turkish population. Developed by Sonnentag

and Fritz (2007), the REQ measures four core recovery dimensions: psychological detachment, relaxation, mastery, and control. This instrument has been cross-culturally validated in countries such as Spain (Sanz-Vergel et al., 2010), Korea (Park et al., 2011a, b), Finland (Kinnunen et al., 2011), Japan (Shimazu et al., 2012), South Africa (Mostert & Els, 2015), Nepal (Panthee et al., 2020), Argentina (Trógolo et al., 2020), France (Le Moal et al., 2024), and Indonesia (Hamsyah et al., 2024). The REQ has provided strong reliability across cultural and linguistic contexts and showed positive correlations with job satisfaction and work engagement and negative associations with emotional exhaustion and work-related rumination. The validated Turkish version of the REQ will provide valuable utility for both research and practice and will be employed to assess self-reported recovery experiences among Turkish-speaking adult population across diverse industries and work schedules. By establishing its psychometric properties, the REQ-Tur can function as a diagnostic tool and an outcome measure to inform workplace interventions designed to optimize employee recovery processes.

Recovery experiences

In their seminal work published almost two decades ago, Sonnentag and Fritz (2007) developed their recovery theory and Recovery Experience Questionnaire (REQ) to capture individuals' off-job psychological experiences. They defined recovery as a process of renewal and rejuvenation that cause a person's high stress levels and impaired mood, brought on by a stressor or similar demand, to return to their previous state (Sonnentag & Fritz, 2007). Conservation of Resources (COR) theory and the Effort-Recovery (E-R) model are the two prominent theories that have been used for conceptualizing recovery experiences. Hobfoll's COR theory argues that it is the pursuit for acquiring, maintaining, and protecting their resources that individuals strive for, especially in the face of heavy workload and its consequences (Demerouti et al., 2009). From a COR perspective, work stressors can contribute to depletion of individuals' resources, and this in turn leads to negative outcomes like burnout and diminished well-being. It is possible to restore depleted resources (*i.e.,* during work) by gaining additional resources (*i.e.,* new external or internal resources) which helps to compensate for lost resources. The effort-recovery perspective posits that recharging personal resources through non-work activities may aid in recovery. Accordingly, recovery takes place when individuals disengage from work and related pressures. Effort-recovery model contends that recovery takes place when individuals disengage from work and participate in nonwork activities to restore their energy resources (Bennett et al., 2018). Both of those models emphasize the role of rejuvenating experiences for recovery and replenishment after work. Building on these theoretical frameworks, previous research has examined and provided evidence that post-work recovery attempts might counteract the negative impacts of work stress and enhance employee morale, well-being, and performance. In their seminal work on recovery experiences, Sonnentag and Fritz (2007) distinguished between four recovery experiences, including psychological detachment, relaxation, mastery, and control.

As an effective diversionary strategy, "psychological detachment" denotes a sense of mental disengagement and being both physically and psychologically away from work. The term detachment describes an individual's capacity to separate their emotions and ideas from the workplace and being not preoccupied with work-related responsibilities (Sonnentag et al., 2010).

"Relaxation" refers to deliberately chosen or serendipitous activities that associate with low levels of stress. Such activities include reading, listening to music, walking in the nature, or jogging, as well as more structured practices such as meditation, yoga, or receiving massages. When it comes to personal welfare, the best recovery experiences are those that involve psychological detachment and relaxation.

"Mastery" includes activities and challenges off-the-work that offer opportunities for learning and personal development, without exerting unwanted pressure. Some examples of mastery experiences might be pursuit of a sport, volunteering, learning a new language, participating in educational courses or any other activity that involves acquiring new competencies and knowledge.

"Control" refers to the capacity to make decisions among options, such as about how to spend non-work time. Having control over leisure activities enables individuals to select pursuits that are personally engaging and enjoyable, thereby enhancing the recovery process. Control contributes to feelings of autonomy and self-efficacy, which are instrumental for wellbeing (Sonnentag & Fritz, 2007). Being in charge of one's decisions can be a benefit since it can boost one's sense of competence and discretion. These four experiences have been shown to be primary constituents of recovery and correlate with desirable work outcomes.

Recovery experiences have unique relationships with personal and work outcomes. Psychological detachment has been positively linked to improved sleep quality, reduced physiological strain indicators and better mood at the end of the day (Sonnentag & Bayer, 2005). Psychological detachment has also been linked to increased levels of job satisfaction, organizational commitment, and job performance (Park et al., 2011a, b). Relaxation activities help undo the effects of negative emotions, restore balance, enhance overall well-being, decrease mental and physical stress levels,

as well as to restore positive affect (Shimazu et al., 2012). A meta-analytical investigation has revealed that relaxation interventions contribute to managing occupational stress and enhancing mental wellbeing (Richardson & Rothstein, 2008). Further research has shown that relaxation activities like mindfulness meditation correlate with reduced levels of depression, anxiety, and burnout (Hülsheger et al., 2013; Kröll et al., 2017). Another meta-analytical study suggests that there are consistently positive links between both relaxation and mastery and various personal/job outcomes (Headrick et al., 2023). Mastery experiences, requiring self-regulation, are linked to improved recovery and higher well-being. A higher level of mastery experience leads to enhanced self-efficacy, a more positive mood, higher psychological well-being, and life satisfaction. The meta-analytical findings of Headrick et al. (2023) provide evidence for the positive correlations between mastery experiences and higher levels of engagement, job satisfaction, and commitment. Lastly, control over leisure time has been found to be associated with lower emotional exhaustion and better psychological detachment from work.

Current study

Originally developed by Sonnentag and Fritz (2007), the REQ has demonstrated cross-cultural validity across multiple countries including Spain, South Korea, Finland, Japan, South Africa, Nepal, Argentina, and Indonesia (Hamsyah et al., 2024; Kinnunen et al., 2011; Mostert & Els, 2015; Panthee et al., 2020; Park et al., 2011a, b; Sanz-Vergel et al., 2010; Shimazu et al., 2012; Trógolo et al., 2020). The questionnaire has consistently shown strong relationships with both organizational outcomes and individual wellbeing indicators. The current study provides reliability and validity evidence for REQ-Tur, validating it for the Turkish context to provide a reliable measurement tool for assessing recovery experiences across diverse Turkish speaking populations.

According to Conservation of Resources theory, excessive job demands (e.g., workload) deplete employees' personal resources, thereby impairing recovery processes (Demerouti et al., 2009). When work tasks remain incomplete due to excessive workload, psychological detachment becomes difficult, increasing mental preoccupation and stress (Sonnentag & Kruel, 2006). This cognitive strain can interfere with relaxation and prolong recovery needs (Sonnentag & Bayer, 2005), making heavy workload a precursor of high recovery needs. Another common organizational phenomenon that negatively affects employees and contributes to high recovery needs is general work stress. Additionally, several well-being indicators within both organizational and individual contexts can be considered as potential consequences of recovery experiences. In keeping with the direction of earlier research, we have focused on work engagement and life satisfaction in the present study. Empirical studies have demonstrated positive associations between work engagement and high levels of recovery (Siltaloppi et al., 2009; Sonnentag et al., 2012). Since experiences of recovery help in stress-coping, they naturally support psychological well-being (Sonnentag & Fritz, 2007).

Materials and method

Participants and procedure

This validation study is based on a cross-sectional design. Data were collected through an online questionnaire survey administered to a general sample of 18 + individuals working in various industries in Turkey. Prior to data collection, ethical approval was waived by the Ethical Review Board of ….. University (Date: 16.02.2022; Protocol No: E-87432956–050.99–216494-117/25). The survey link included an informed consent statement, and participation was entirely voluntary. Data was collected between April 2023 to April 2024.

A convenience sampling approach was employed to recruit working adult participants, yielding an initial sample of 753 respondents. After excluding incomplete responses with missing data, a final dataset of 725 valid cases was retained for analysis. Participants represented a broad cross-section of industries, with the majority (88.3%) working in healthcare, education, defense, and service sectors.

The sample respondents' demographic details are displayed in Fig. 1. 61.7% of participants identified as male, with the participants' average age being 34.9 years ($SD = 10.1$). Married people made up the majority of the participants (56.1%), and most worked in the public sector (78.3%). Additionally, 35.5% of the participants were shift workers. On average, the participants worked 39.4 h per week ($SD = 15.1$) and had a mean total working experience of 12.7 years ($SD = 9.5$).

Translation and cross-cultural validation

The Turkish adaptation of the Recovery Experience Questionnaire (REQ) was conducted using the committee translation method, which is widely recommended for ensuring both linguistic accuracy and cultural relevance in psychological scale adaptation. The process began with an initial forward translation from English to Turkish, carried out by the second author, who is fluent in both languages and has domain expertise in organizational psychology. A

	N	(%)	Mean	(SD)
Age (yr)	725		34.9	10.1
Gender				
Men	448	61.7		
Women	277	38.3		
Marriage				
Yes	407	56.1		
No	318	43.9		
Work Sector				
Public	568	78.3		
Private	157	21.6		
Work Industry				
Healthcare	265	36.5		
Education	163	22.5		
Defense	155	21.3		
Service	58	8.0		
Other	84	11.7		
Working Hours/week	725		39.4	15.1
Total Working Years	725		12.7	9.5
Shift work				
Yes	258	35.5		
No	467	64.5		
Shift Freq/month	258		1.9	3.2

Fig. 1 Demographics (N=725)

panel of five bilingual scholars specializing in work psychology and psychometrics evaluated the initial translation. They were asked to compare and evaluate the original and translated versions by using a structured form for semantic equivalence, clarity, and cultural appropriateness. Members convened online to reconcile discrepancies and agree on optimal item formulations. Following this collaborative discussion and production of a draft REQ-Tur, an independent certified translator (unfamiliar with the original scale) back-translated the finalized Turkish version to English. This back-translation was then compared with the original English version to identify any conceptual or semantic deviations. This dual-phase committee approach, complemented by back-translation ensured both linguistic accuracy and cultural relevance, and enabled us to maintain conceptual alignment with the original REQ.

Measures

The recovery experiences questionnaire

We employed the Turkish adaptation of the original Recovery Experiences Questionnaire, based on Sonnentag and Fritz's (2007) original measure, to assess four distinct recovery experiences: psychological detachment, relaxation, mastery, and control. The REQ-Tur maintains the original 16-item structure, with 4 items measuring each dimension (e.g., "I distance myself from my work"). The overall internal consistency is α=.87.

Workload

The 4-item Mental Workload Scale (MWS) was administered in its validated Turkish version (Akca et al., 2020). Developed by Rubio-Valdehita and colleagues (2017), The MWS measures perceived mental workload intensity using self-report items, such as "My workday is usually too busy to leave me free time". The Turkish revised version demonstrated good internal consistency (α=.90) in the validation study.

Work engagement

The Turkish adaptation of the "Utrecht Work Engagement Scale" (UWES-3) (Güler et al., 2019) initially developed by Schaufeli and colleagues (2019) has been used to assess work engagement. The validation study found internal consistency to be α=.72. UWES-3 includes 3 subdimensions, namely vigor, dedication, and absorption. Both Schaufeli et al. (2019) and Güler et al. (2019) reported that UWES-3 should be viewed as a unified construct because of the strong relationships between the three components. Respondents were asked to rate their level of agreement with each item on a five-point Likert scale.

General job stress

Job stress was measured with "General Job Stress Scale" originally developed by de Bruin (2006) and validated in Turkish by Teleş (2021). The scale consists of 3 items (sample item includes, "I feel like I cannot cope with this job anymore") and measures individual experiences through self-report data. The Turkish revised version demonstrated good internal consistency (α=.91).

Life satisfaction

Life satisfaction was measured using the Turkish version (Bekmezci & Mert, 2018) of the "Satisfaction with Life Scale (SWLS)". The 5-item scale demonstrates good internal consistency (α=.87) and assesses overall life satisfaction with items such as "In most ways, my life is close to my ideal".

For all measures, respondents were asked to score each item on a 5-point Likert scale, where 1 represented total disagreement and 5 represented total agreement.

Analyses

We relied on multiple sources of validity evidence to evaluate the psychometric properties of the REQ-Tur, following the guidelines established in Standards for Educational and Psychological Testing (AERA et al., 2014). We employed a cross-validation procedure by randomly splitting the full sample into two independent subsamples, as used in previous research such as Willmer et al., 2019 and Pallant & Bailey, 2005. As this approach helps in validating the constructs soundly (Worthington & Whittaker, 2006), we performed exploratory factor analysis (EFA) on the first subsample to identify the factor structure and confirmatory factor analysis (CFA) on the second subsample to confirm this structure. JAMOVI and JASP, both open-source data analysis software, have been used for EFA, CFA, and subsequent analyses.

Before proceeding with further analyses, we screened the data for normality. To ensure univariate normality, we checked skewness and kurtosis values, and all items were within the range of –1.5 to + 1.5. Based on these results, the maximum likelihood estimation method was used for both EFA and CFA. The total sample (N = 725) was randomly split into two equal subsamples for cross-validation. The first subsample (n = 362) was used to conduct Exploratory Factor Analysis and the second (n = 363) was used for Confirmatory Factor Analysis.

For EFA, principal axis factoring was chosen as the extraction method due to its robustness to violations of multivariate normality. Oblimin rotation was applied, assuming correlations among latent factors. Factor retention was guided by Kaiser's criterion (eigenvalues > 1), scree plot examination, and parallel analysis. Sampling adequacy was assessed using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity. The KMO value was.848, and Bartlett's test was significant (χ2 = 2846, df = 1015, p <.001), indicating that the data were suitable for factor analysis. Items with factor loadings below.40, high cross-loadings, or low communalities (<.30) were considered for removal.

CFA was conducted on the second subsample using maximum likelihood estimation. Model fit was evaluated using multiple indices: χ^2/df ratio, CFI, TLI, RMSEA, and SRMR. Fit criteria followed conventional thresholds (e.g., CFI ≥.90, TLI ≥.90, RMSEA ≤.08, SRMR ≤.08).

To evaluate discriminant validity among the latent constructs, the Heterotrait-Monotrait Ratio of Correlations (HTMT) was calculated, as recommended by Henseler and colleagues (2015). Values below the conservative threshold of 0.85 were considered evidence of adequate discriminant validity.

We conducted a multi-group confirmatory factor analysis using maximum likelihood estimation to assess the measurement equivalence across gender groups. This approach helps to ensure that REQ-Tur is interpreted similarly across subgroups, allowing for meaningful group comparisons (Byrne, 2008). A way of measuring invariance is to check for the change (Δ) in CFI and RMSEA values between unrestricted and restricted models. As suggested by Chen (2007), a decrease in CFI of ≥ −0.01 and an increase in RMSEA of ≥ 0.015 serves as an appropriate criterion, indicating a decrease in fit between models for sample sizes over 300.

We then analyzed the correlations between REQ-Tur and several theoretically related constructs to provide further validity evidence. According to recovery theory (Sonnentag & Fritz, 2007), recovery experiences positively correlate with desirable outcomes such as work engagement and life satisfaction and negatively with strain-related indicators such as workload and job stress.

Finally, as part of the validation process, group comparison analyses were conducted to examine evidence based on differential functioning across subgroups. One-way Anovas were employed to assess whether scores on the four subdimensions of the REQ-Tur systematically varied by demographic factors.

Results

Factor structure of the REQ-Tur

The final EFA solution supported a four-factor model consistent with the original REQ structure (psychological detachment, relaxation, mastery, control). The four-factor solution was showed 61.8% total variance. However, one item "I kick back and relax" was omitted as it demonstrated nearly equal loadings on two separate factors. This ambiguity in factorial alignment suggests that the item did not represent a distinct latent construct within the Turkish context. The likely explanation for this psychometric issue lies in linguistic and cultural translation challenges. Specifically, the idiomatic expression "to kick back" lacks a direct and culturally equivalent counterpart in Turkish. Although the item was translated using a functionally equivalent phrase intended to preserve meaning, it appears that the concept did not translate with sufficient clarity to anchor the item within a single recovery dimension. This aligns with prior literature on instrument adaptation, which cautions that idiomatic phrases may not retain their psychometric integrity across languages and cultures (Beaton et al., 2000). Additionally, EFA found that Item 4 in REQ-Tur "I get a break from the demands of work," which was loaded under the Psychological Detachment in the original REQ, was

reloaded to the Relaxation factor in REQ-Tur. This finding potentially suggests that there is need for culturally situated reconceptualization of recovery, because a Western-based understanding of the distinctions between psychological detachment and relaxation may hold different meanings in Turkish work culture where work-related connection might be culturally normative rather that detrimental. While in the original instrument, psychological detachment is conceptualized as a cognitive disengagement from work-related thoughts (Sonnentag & Fritz, 2007), the Turkish participants may have perceived "getting a break from work demands" as a felt sense of relief or emotional decompression, which aligns more closely with the relaxation dimension. In cross-cultural instrument validation, the functional equivalence of items rather than literal linguistic translation is critical for maintaining construct validity (Hambleton, 2005; Hambleton & Lee, 2013). When an item activates different connotations in the target language, its factorial position may shift accordingly, reflecting differences in the latent structure of experience rather than measurement error per se. Additionally, the revised factor solution retained theoretical coherence and psychometric strength. The factor loadings were substantial, communalities were satisfactory, and cross-loadings were minimal (except in the aforementioned item). Moreover, internal consistency coefficients for each subscale exceeded acceptable thresholds ($\alpha > .70$), and item-total correlations remained stable, reinforcing the structural robustness of the REQ-Tur. As such, the final four-factor structure of the REQ-Tur mirrors the original conceptual model, while incorporating culturally appropriate modifications.

The resulting structure matrix featured four factors. Factor 1, Relaxation, included four items with values from.42 to.94, accounting for 16.4% of the variance. Factor 2, Psychological Detachment, had three items with loading values from.80 to.89, that explained 15% of the total variance. Factor 3, Mastery, comprised four items with factor loadings from.54 to.81; the variance explained 15% of the total variance. Finally, Factor 4, Control, also had four items with leaning values between.50 and.93, which explained 15.3% of the total variance. The final structure matrix was fairly satisfying in terms of discrimination between the factors (see Fig. 2).

Based on EFA findings, CFA was conducted on the second half of the data. Two different models, a four-factorial and a unifactorial model, were subjected to testing. The table presented in Fig. 3 displays the fit indices for both models. The findings indicate that the unifactorial model is not a good fit for the data, whereas the second-order four-factorial model offers a satisfactory fit. The four-factorial model of REQ-Tur demonstrated reasonably acceptable fit without requiring any error term covariation, which is consistent with the original REQ by Sonnentag and Fritz (2007). The REQ-Tur items are presented in the appendix.

Fig. 2 Exploratory factor analysis results ($N = 362$)

Nu.	Item	Factor 1: Relaxation (16.4%)	Factor 2: Psychological Detachment (15%)	Factor 3: Mastery (15%)	Fact 4: Con (15.
6	I do relaxing things. (RE)	.94			
7	I use the time to relax. (RE)	.77			
8	I take time for leisure. (RE)	.76			
4	I get a break from the demands of work. (RE)	.42			
1	I forget about work. (PD)		.89		
2	I don't think about work at all. (PD)		.84		
3	I distance myself from my work. (PD)		.80		
10	I seek out intellectual challenges. (MA)			.81	
9	I learn new things. (MA)			.73	
12	I do something to broaden my horizons. (MA)			.72	
11	I do things that challenge me. (MA)			.54	
15	I determine for myself how I will spend my time. (CO)				.93
16	I take care of things the way that I want them done. (CO)				.77
14	I decide my own schedule. (CO)				.62
13	I feel like I can decide for myself what to do. (CO)				.50

PD = psychological detachment, RE = relaxation, MA = mastery, CO = control.
Items are numbered the same way as in the original measure (Sonnentag & Fritz, 2007)

Fig. 3 Confirmatory factor analyses results ($N=363$)

Model	χ^2	df	p	CFI	TLI	RMSEA	SRMR	Lower 90%	Upper 90%
One-factor	1418	104	p<.001	.54	.47	.19	.13	.18	.19
Four-factor	207	84	p<.001	.95	.93	.06	.05	.05	.07

N=725, χ^2= Chi-square value, df=degree of freedom, CFI=Comparative Fit Index, TLI=Tucker-Lewis Index, RMSEA= Root Mean Square Error of Approximation, SRMR=Standardized Root Mean Square, Lower and upper 90%: Confidence intervals for the upper and lower bounds of RMSEA

Table 1 Discriminant validity: heterotrait-monotrait ratio*

	1. Psychological detachment	2. Relaxation	3. Mastery	4. Control
2	.48	-	-	-
3	.06	.46	-	-
4	.19	.60	.45	-

*HTMT ratio of less than.85 points to distinctiveness

Table 2 Multigroup measurement ınvariance models of REQ-Tur for Men vs. Women

	X2 (df), p value	CFI	RMSEA	SRMR
Configural invariance model	314(168), $p<.001$	.94	.006	.006
Metric invariance model	391(179), $p<.001$	.94	.006	.006
Scalar invariance model	340(190), $p<.001$	.94	.006	.006
Structural invariance model	389(219), $p<.001$	.93	.006	.007

Internal consistency

Following the CFA analysis, we assessed the composite reliability of the REQ factors. Internal consistency reliability for all subscales was calculated using Cronbach's alpha and with all coefficients exceeding.70. The REQ-Tur demonstrated good internal consistency: psychological detachment (α=.89), relaxation (α=.86), mastery (α=.78), and control (α=.81). These values meet conventional thresholds for research use (Elder et al., 2023).

Discriminant validity

The Heterotrait-Monotrait ratio (HTMT) was used for verifying discriminant validity between factors or constructs, offering a comparison of the correlations between indicators of different constructs to the correlations of indicators within the same constructs. An HTMT value of less than.85 is used as a baseline for discriminant validity (see Table 1). To assess convergent validity, the Average Variance Extracted values were computed (MacKenzie et al., 2005), which were.72 for psychological detachment,.58 for relaxation,.48 for mastery, and.53 for control.

Multigroup CFA for testing gender-based invariance

We explored multigroup (men versus women) measurement invariance through CFA with maximum likelihood estimation for configural, metric, scalar, and structural invariance (Byrne, 2008). The results indicate that a high degree of invariance may be concluded because the fit change across the configural, metric, scalar, and structural invariance models is minimal. Accordingly, full measurement invariance of the REQ-Tur is confirmed across gender (see Table 2).

Validity evidence based on correlations with other variables

The validity of REQ-Tur was further assessed by analyzing its correlations with previously hypothesized job-related and well-being variables (see Table 3). Overall,

Table 3 Means, standard deviations, and correlations between study variables ($N=725$)

Variables	M	(SD)	1	1a	1b	1c	1d	2	3	4	5
1. Recovery experiences	3.33	.64	(.86)								
1a. Psychological detachment	2.61	.92	.69**	(.89)							
1b. Relaxation	3.38	.92	.83**	.57**	(.86)						
1c. Mastery	3.62	.81	.65**	.14**	.38**	(.78)					
1d. Control	3.71	.87	.72**	.23**	.43**	.44**	(.81)				
2. Workload	3.46	.85	-.21**	-.15**	-.19**	-.14**	-.14**	(.70)			
3. General job stress	2.88	1.11	-.24**	-.05	-.17**	-.23**	-.25**	.53**	(.79)		
4. Work engagement	3.76	.83	.28**	-.05	.19**	.33**	.37**	-.10**	-.41**	(.76)	
5. Life satisfaction	3.21	.87	.36**	.09*	.25**	.31**	.40**	-.13**	-.29**	.47**	(.87)

**$p<.001$, *$p<.05$, Numbers in parentheses shows Cronbach's alpha values

Table 4 One-way ANOVA results of REQ-Tur factors across demographics

Demographics	N	Psychological detachment	Relaxation	Mastery	Control
Age (yr)					
18–29	261	2.60 (.90)^{NS}	3.44 (.92) ^{NS}	3.66 (.80) ^{NS}	3.72 (.84) ^{NS}
30–36	155	2.56 (.92)	3.29 (.87)	3.66 (.83)	3.77 (.86)
37–44	177	2.64 (.96)	3.40 (.97)	3.53 (.84)	3.69 (.91)
45–65	132	2.62 (.92)	3.34 (.90)	3.62 (.80)	3.67 (.87)
Gender					
Men	448	2.59 (.87) ^{NS}	3.44 (.84)*	3.66 (.77) ^{NS}	3.71 (.81) ^{NS}
Women	277	2.63 (1.01)	3.29 (1.02)	3.56 (.86)	3.73 (.95)
Marriage					
Yes	407	2.60 (.96) ^{NS}	3.26 (.95) ***	3.59 (.84) ^{NS}	3.67 (.90) ^{NS}
No	308	2.61 (.87)	3.54 (.84)	3.66 (.78)	3.77 (.81)
Work sector					
Public	568	2.57 (.89) *	3.36 (.88) ^{NS}	3.61 (.80) ^{NS}	3.68 (.85) ^{NS}
Private	157	2.76 (1.01)	3.47 (1.03)	3.65 (.84)	3.82 (.92)
Work industry					
Healthcare	265	2.65 (.87) ***	3.44 (.87) ***	3.53 (.79) *	3.57 (.81) ***
Education	163	2.36 (.91)	3.13 (.98)	3.76 (.82)	4.01 (.84)
Defense	155	2.58 (.75)	3.42 (.77)	3.58 (.74)	3.52 (.79)
Service	58	2.90 (1.15)	3.63 (.99)	3.71 (.89)	3.96 (1.00)
Other	84	2.80 (1.09)	3.44 (1.06)	3.62 (.90)	3.77 (.94)
Working hours/week					
1–20	84	2.53 (.94) ^{NS}	3.41 (1.07) ^{NS}	3.71 (.92) ^{NS}	3.83 (.94) **
21–40	380	2.63 (.92)	3.42 (.89)	3.64 (.80)	3.77 (.81)
41–50	187	2.66 (.89)	3.37 (.88)	3.53 (.75)	3.53 (.90)
51 and more	72	2.44 (.97)	3.16 (.92)	3.63 (.87)	3.77 (.89)
Total working years					
0–10	338	2.58 (.85) ^{NS}	3.49 (.84) **	3.66 (.75) ^{NS}	3.76 (.78) ^{NS}
11–20	229	2.67 (1.00)	3.23 (.98)	3.59 (.87)	3.66 (.94)
21–30	139	2.53 (.91)	3.35 (.91)	3.52 (.82)	3.68 (.92)
31 and more	19	2.89 (1.12)	3.57 (1.14)	3.96 (.83)	3.82 (.89)
Shift work					
Yes	258	2.59 (.88) ^{NS}	3.31 (.89) ^{NS}	3.51 (.83) **	3.52 (.84) ***
No	467	2.62 (.94)	3.42 (.93)	3.68 (.80)	3.82 (.86)
Shift Freq/month					
1–5	189	2.63 (.85) *	3.40 (.83) *	3.55 (.76) ^{NS}	3.64 (.78) ***
6–10	62	2.67 (.96)	3.16 (.98)	3.42 (.90)	3.28 (.90)
11–15	12	1.89 (.80)	3.08 (1.00)	3.60 (.92)	3.60 (.88)
16–20	3	2.00 (.90)	2.50 (1.39)	3.00 (1.75)	1.91 (.80)

$^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. *SD* Standard deviation; *NS* Nonsignificant

the Recovery Experiences composite score was positively associated with work engagement ($r=.28$, $p<.001$) and life satisfaction ($r=.36$, $p<.001$), and negatively associated with general job stress ($r=-.24$, $p<.001$) and workload ($r=-.21$, $p<.001$). According to inter-factor correlations, the highest correlation was between relaxation and control ($r=.48$, $p<.001$), mastery and control ($r=.45$, $p<.001$), relaxation and psychological detachment ($r=.39$, $p<.001$), relaxation and mastery ($r=.39$, $p<.001$), psychological detachment and mastery ($r=.20$, $p<.001$), and psychological detachment and control ($r=.10$, $p<.001$), respectively.

Group differences in recovery experiences

Finally, the effects of demographic variables on the four recovery experiences were assessed by conducting a one-way Anova, providing evidence for statistical differences in 1) psychological detachment based on work sector, work industry, and shift frequency, 2) relaxation based on gender, marriage, work industry, total working years, and shift frequency, and 3) mastery and control according to work industry, shift work, and shift frequency, as shown in Table 4.

Discussion and conclusion

The Recovery Experience Questionnaire's proven record of validation across cultures (i.e., Almén et al., 2018; Kazlauskas et al., 2023; Panthee et al., 2020; Shimazu et al., 2012) indicates that the current factorial structure of the questionnaire consisting of psychological detachment, relaxation, mastery, and control captures the multifaceted nature of recovery from work-related stress. In line with previous cross-cultural validations of REQ, this study sought to contribute to this body of research from another cultural perspective by validating the Recovery Experience Questionnaire for Turkish audience and assess its psychometric properties on a sample of Turkish speaking respondents. To evaluate REQ's multidimensional validity, we analyzed its factorial structure as well as the associations between four recovery experiences, and various predictor and outcome variables. The findings confirmed that the REQ-Tur is a reliable and valid tool for gauging recovery experiences. The REQ-Tur as a culturally tailored tool can now be applied across diverse settings to evaluate recovery processes, and help promote better workplace and individual well-being.

Analyses revealed significant negative associations between recovery experiences (relaxation, mastery, control) and antecedent factors (workload, job stress), while showing positive relationships with outcome variables (work engagement, life satisfaction. These findings are aligned with the theoretical framework of the REQ, associating recovery experiences with different antecedents and outcomes (Sonnentag & Fritz, 2007; Sonnentag et al., 2008). Correlations between four distinct recovery experiences are statistically significant positive. The association between psychological detachment and relaxation proves to be the most robust, while the correlation between mastery and psychological detachment turns out to be the least pronounced. Moreover, the overall recovery experience score is negatively associated with workload and general job stress, and positively correlated with work engagement and overall life satisfaction. Moreover, all these associations are statistically significant, and findings are consistent with prior validation studies (Sonnentag & Fritz, 2007), supporting the convergent validity of the REQ-Tur.

Analysis at the subscale level, however, yielded differentiated findings. As expected, we identified significant positive correlations between three recovery subscales of relaxation, mastery, and control subscales and work engagement (r=.19 to.37, all p<.001) and life satisfaction (r=.25 to.40, all p<.001), and negative correlations between job stress (r=-.17 to -.25, all p<.001) and workload (r=-.19 to −14, all p<.001). Consistent with theoretical expectations, these recovery experiences appear to replenish energetic resources and cultivate psychological capacities that are fundamental for maintaining occupational well-being (Headrick et al., 2023; Kinnunen et al., 2011). However, psychological detachment subscale showed limited associations, correlating only weakly with life satisfaction (r=.09, p<.05) and unrelated to job stress (r=–.05, ns) and work engagement (r=–.05, ns). This finding contrasts with some Western-based findings (e.g., Siltaloppi et al., 2009) and may potentially reflect unique sociocultural dynamics in Turkish work environments where organizational norms and social expectations may constrain psychological detachment. As psychological detachment is context-dependent (Sonnentag et al., 2010), these divergent findings might suggest that cultural frameworks shape the manifestation and efficacy of recovery experiences.

To analyze potential gender differences in REQ-Tur interpretation, we performed multi group CFA, testing four invariance levels: configural, metric, scalar and strict. Model comparisons based on fit deterioration indicated strong measurement invariance across gender, suggesting the REQ-Tur's factor structure operates equivalently for men and women. Previous studies in different cultural contexts (Albulescu et al., 2024; Almén et al., 2018) have found similar patterns of invariance, suggesting that the foundational constructs of psychological detachment, relaxation, mastery, and control possess a degree of cross-cultural and demographic stability. Our study extends this evidence to a Turkish working population and supports the utility of the REQ-Tur in gender-diverse samples.

Additionally, we investigated the influence of demographic characteristics across four recovery experience subdimensions. Results indicate no statistically significant differences in any of the recovery experiences in terms of participants' age groups. Nonetheless, significant differences emerge based on gender and marriage, indicating that men and single individuals experience a better state of relaxation compared to women and married individuals. Although the existing research is yet to establish certain connections between different types of recovery experiences and age and gender (Sonnentag et al., 2022), our finding aligns with prior studies that have revealed gender and marital status to influence specific aspects of the recovery process (de Bloom et al., 2013). However, the study finds that work industry is the sole demographic variable that differs across all recovery experience factors. This finding aligns with previous research that suggests job demands may play a minor role in day-level recovery (Sonnentag & Jelden, 2009). Specifically, industries such as healthcare, education, and defense, which are characterized by high workload and job stress, may require additional managerial tools to support employees in disengaging psychologically and physically from work (Park et al., 2011a, b; Sonnentag & Fritz, 2007). For instance, earlier studies have demonstrated

that interventions such as providing recovery breaks during work hours, promoting physical activity, and implementing social support programs can effectively enhance employee recovery experiences in high-demand industries (Sluiter et al., 2003; Sonnentag et al., 2022).

Although there is a growing body of research on recovery experiences in work settings, most studies conducted on this issue have taken place in Western cultures and within Western organizational settings (Hamsyah et al., 2024). In non-Western settings such as Turkey, it is possible that the cultural and organizational context differs, leading to the possibility of different individual experiences. In this regard, recovery experience metrics that are validated and customized for the Turkish setting are required. Most significantly, individuals around the world, including those in Turkey, continue to face major challenges, making the experiences for recovery a vital human need. As cultural nuances may shape the salience of different recovery domains, there is a need for linguistic and cultural equivalence in psychological assessment tools (Beaton et al., 2000). The current study contributes to a growing understanding of how recovery operates and supports the use of REQ-Tur as a valid tool for both research and applied purposes.

However, this study has several limitations. First, its focus was primarily on recovery experiences related to work-related variables, neglecting the potentially significant social aspects of recovery. These social factors have been shown to be crucial for the entire recovery process (Sonnentag & Fritz, 2007). Therefore, future studies could benefit from examining the social side of individual recovery. Second, the control variables used in this study were limited, and future research should consider other predictors and consequences of recovery beyond those investigated in this study. Furthermore, given that previous research has mainly focused on psychological detachment, other recovery experiences require greater attention, and examining more complex relationships would be valuable in future studies. A meta-analytic study found recovery experiences to associate with positive personal outcomes through reduced exhaustion and to associate with positive job performance outcomes through work engagement (Headrick et al., 2023). Such mediation effects will have to be addressed. Experimental models like Hahn and colleagues' (Hahn et al., 2011) recovery training study would also help contribute to more nuanced understanding of recovery experiences on individual and organizational level of analysis.

Overall, the findings of this study show that demographic variables have relatively weak impacts on employee recovery experiences, while the work industry might be more relevant. Importantly, most of the sample were employees from the three major industries—health, education, and defense—which might also limit its generalizability to other industries. For this reason, potential researchers might focus on the impacts of demographic variables on recovery experiences across different working contexts to obtain a more holistic view on the roles of these variables. In addition, investigating the role of negative and positive experiences with family members could be helpful in understanding the impact of social environment on recovery experiences.

Subtle aspects of the recovery experiences such as the recovery paradox (a phenomenon where individuals who engage in activities that are supposed to help them recover from work-related stress, such as leisure activities or vacations, do not always experience the expected benefits but instead, they may still feel fatigued and emotionally drained) has been an integral concern for studies on recovery experience since it was introduced by Sonnentag (Sonnentag, 2018). The adapted versions of the questionnaire might need to address the recovery paradox and issues that might accordingly arise. Additionally, the nuances introduced by Recovery Activity Characteristics Questionnaire that incorporate activity dimensions such as physical, mental, spiritual, creative, virtual, and outdoor could be beneficial in understanding the types of activities that might uniquely correlate with different recovery constructs (Alameer et al., 2023). Researchers might also seek to elaborate on recovery experiences from a wellbeing perspective in alternative, flexible and remote work contexts by using *i.e.* the E-Work Life Scale.

Finally, the use of self-report data could result in common method bias, social desirability bias, and generalizability problems, although it should be noted that the main objective of this study was to validate the REQ's Turkish version, rather than investigating the associations between recovery experiences and other variables. Additional research on Turkish samples is recommended to obtain more data on the validity of REQ-Tur. The cross-sectional design of the current study restricts the ability to infer causality or to capture temporal fluctuations in recovery experiences. In addition, although care was taken during translation and cultural adaptation, the loss of meaning in idiomatic expressions (e.g., "kick back and relax") displays the challenges inherent in cross-cultural instrument adaptation and highlights the need for qualitative exploration to complement quantitative findings. As noted by an anonymous reviewer of this manuscript, qualitative explorations of recovery experiences, as well as the use of diverse methodological approaches to measure recovery, remain limited in the current literature with notable exceptions such as Siltaloppi et al.'s (2011) longitudinal study and Bosch et al. (2018) diary study. Cross-validation with diverse Turkish samples and exploratory qualitative work may be particularly valuable in this regard. We also contend that future research should explore whether an alternative factor structure or

the addition of a culturally emergent dimension may better capture the recovery experience in non-Western contexts like Turkey. A previous study conducted in the Swedish context proposed a revised version of the Recovery Experience Questionnaire by introducing a fifth dimension termed "experiences of contrast", highlighting the potential for culturally sensitive extensions of the original model (Almén et al., 2018). We hope that these potential avenues might resonate with future researchers.

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Declarations

Ethical approval Ethical approval was waived by the Ethical Review Board of the Suleyman Demirel University in Turkey (Date: 16.02.2022 and Number: E-87432956–050.99–216494-117/25). The data were collected on a voluntary basis through convenience sampling —a nonprobability sampling technique— and participants were granted confidentiality on behalf of their identity/information with a declaration of anonymity statement at the beginning of the questionnaire form.

Informed consent Informed consent was obtained from all individual participants included in the study.

Conflict of interest On behalf of all authors, the corresponding author states that there is no financial or non-financial conflict of interest among authors.

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References

AERA, APA, & NCME. (2014). Standards for educational and psychological testing. American Educational Research Association.

Akca, M., Yavuz, M., & Küçükoğlu-Tepe, M. (2020). Zihinsel iş yükünün ölçümü: CarMen-Q ölçeğinin Türkçe'ye uyarlaması. *Yaşar Üniversitesi E-Dergisi, 15*(60), 675–691. https://doi.org/10.19168/JYASAR.708357

Alameer, K. M., Uitdewilligen, S., & Hülsheger, U. R. (2023). What are the active ingredients in recovery activities? Introducing a dimensional approach. *Journal of Occupational Health Psychology*. https://doi.org/10.1037/OCP0000354

Albulescu, P., Macsinga, I., Tulbure, B. T., & Rusu, A. (2024). A Romanian adaptation of the recovery experience questionnaire: Psychometric properties and measurement invariance across general and educational sector employees. *Romanian Journal of Applied Psychology, 26*(1), 24–39. https://doi.org/10.2478/rjap-2024-0003

Almén, N., Lundberg, H., Sundin, Ö., & Jansson, B. (2018). The reliability and factorial validity of the Swedish version of the Recovery Experience Questionnaire. *Nordic Psychology, 70*(4), 324–333. https://doi.org/10.1080/19012276.2018.1443280

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine, 25*(24), 3186–3191. https://doi.org/10.1097/00007632-200012150-00014

Bekmezci, M., & Mert, İS. (2018). Yaşam tatmini ölçeğinin Türkçe geçerlilik ve güvenirlilik çalışması. *Toros Üniversitesi İİSBF Sosyal Bilimler Dergisi, 5*(8), 166–177.

Bennett, A. A., Bakker, A. B., & Field, J. G. (2018). Recovery from work-related effort: A meta-analysis. *Journal of Organizational Behavior, 39*(3), 262–275. https://doi.org/10.1002/JOB.2217

Bosch, C., Sonnentag, S., & Pinck, A. S. (2018). What makes for a good break? A diary study on recovery experiences during lunch break. *Journal of Occupational and Organizational Psychology, 91*(1), 134–157. https://doi.org/10.1111/joop.12195

Byrne, B. M. (2008). Testing for multigroup equivalence of a measurement instrument: A walk through the process. *Psicothema, 20*(4), 872–882.

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. Structural Equation Modeling, 14(3), 464–504. https://doi.org/10.1080/10705510701301834

de Bloom, J., Geurts, S. A. E., & Kompier, M. A. J. (2013). Vacation (after-) effects on employee health and well-being, and the role of vacation activities, experiences and sleep. *Journal of Happiness Studies, 14*(2), 613–633. https://doi.org/10.1007/S10902-012-9345-3

de Bruin, G. P. (2006). The dimensionality of the general work stress scale: A hierarchical exploratory factor analysis. *SA Journal of Industrial Psychology*, *32*(4). https://doi.org/10.4102/SAJIP.V32I4.250

Demerouti, E., Le Blanc, P. M., Bakker, A. B., Schaufeli, W. B., & Hox, J. (2009). Present but sick: A three-wave study on job demands, presenteeism and burnout. *Career Development International, 14*(1), 50–68. https://doi.org/10.1108/13620430910933574

Elder, J., Wilson, L., & Calanchini, J. (2023). Estimating the reliability and stability of cognitive processes contributing to responses on the implicit association test. *Personality and Social Psychology Bulletin, 50*(10), 1451–1470. https://doi.org/10.1177/01461672231171256

Güler, M., Çetin, F., & Basım, H. N. (2019). İşe tutulma ölçeği çok kısa versiyonu (UWES-3) geçerlilik ve güvenilirlik çalışması: Alternatif bir versiyon (UWES-6) önerisi. *İş Ve İnsan Dergisi, 6*(2), 189–197. https://doi.org/10.18394/iid.516921

Hahn, V. C., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning how to recover from job stress: Effects of a recovery training program on recovery, recovery-related self-efficacy, and well-being. *Journal of Occupational Health Psychology, 16*(2), 202–216. https://doi.org/10.1037/A0022169

Hambleton, R. K. (2005). Issues, designs and technical guidelines for adapting tests into multiple languages and cultures. In R. K. Hambleton, P. F. Merenda, & S. D. Spielberger (Eds.), *Adapting educational and psychological tests for cross-cultural assessment* (pp. 3–38). Lawrence Erlbaum Associates.

Hambleton, R. K., & Lee, M. K. (2013). Methods for translating and adapting tests to increase cross-language validity. In D. H. Saklofske, C. R. Reynolds, & V. L. Schwean (Eds.), *The Oxford handbook of child psychological assessment* (pp. 172–181). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199796304.013.0008

Hamsyah, F., Miyanaka, D., Tokita, M., Kawada, M., Mori, N., & Shimazu, A. (2024). Validation of the Indonesian version of the recovery experience questionnaire. *Industrial Health, 62*(2), 90–101. https://doi.org/10.2486/indhealth.2023-0070

Hayden, J. A., Wilson, M. N., Riley, R. D., Iles, R., Pincus, T., & Ogilvie, R. (2019). Individual recovery expectations and prognosis of outcomes in non-specific low back pain: prognostic factor review. *Cochrane Database of Systematic Reviews*, *2019*(11). https://doi.org/10.1002/14651858.CD011284.PUB2/MEDIA/CDSR/CD011284/IMAGE_N/NCD011284-CMP-006-06.PNG

Headrick, L., Newman, D. A., Park, Y. A., & Liang, Y. (2023). Recovery experiences for work and health outcomes: A meta-analysis and recovery-engagement-exhaustion model. *Journal of Business and Psychology, 38*(4), 821–864. https://doi.org/10.1007/S10869-022-09821-3

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hülsheger, U. R., Alberts, H. J. E. M., Feinholdt, A., & Lang, J. W. B. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology, 98*(2), 310–325. https://doi.org/10.1037/A0031313

Kazlauskas, E., Dumarkaite, A., Gelezelyte, O., Nomeikaite, A., & Zelviene, P. (2023). Validation of the recovery experience questionnaire in a Lithuanian healthcare personnel. *International Journal of Environmental Research and Public Health*, *20*(3). https://doi.org/10.3390/IJERPH20032734/S1

Kinnunen, U., Feldt, T., Siltaloppi, M., & Sonnentag, S. (2011). Job demands-resources model in the context of recovery: Testing recovery experiences as mediators. *European Journal of Work and Organizational Psychology, 20*, 1–28. https://doi.org/10.1080/1359432X.2010.524411

Kröll, C., Doebler, P., & Nüesch, S. (2017). Meta-analytic evidence of the effectiveness of stress management at work. *European Journal of Work and Organizational Psychology, 26*(5), 677–693. https://doi.org/10.1080/1359432X.2017.1347157

Le Moal, M., Thurik, R., & Torrès, O. (2024). Validation and psychometric evaluation of the French version of the recovery experience questionnaire: Internal consistency and validity assessment. *Frontiers in Psychology, 15*, Article 1466905. https://doi.org/10.3389/fpsyg.2024.1466905

MacKenzie, S. B., Podsakoff, P. M., & Jarvis, C. B. (2005). The problem of measurement model misspecification in behavioral and organizational research and some recommended solutions. *Journal of Applied Psychology, 90*(4), 710–730. https://doi.org/10.1037/0021-9010.90.4.710

Mostert, K., & Els, C. (2015). The psychometric properties of the recovery experiences questionnaire of employees in a higher education institution. *Journal of Psychology in Africa, 25*(1), 37–43. https://doi.org/10.1080/14330237.2014.997006

Nevin, A. D., & Schieman, S. (2020). Technological tethering, digital natives, and challenges in the work–family interface. *The Sociological Quarterly, 62*(1), 60–86. https://doi.org/10.1080/00380253.2019.1711264

Nijp, H. H., Beckers, D. G. J., van de Voorde, K., Geurts, S. A. E., & Kompier, M. A. J. (2016). Effects of new ways of working on work hours and work location, health and job-related outcomes. *Chronobiology International, 33*(6), 604–618. https://doi.org/10.3109/07420528.2016.1167731

Pallant, J. F., & Bailey, C. M. (2005). Assessment of the structure of the Hospital Anxiety and Depression Scale in musculoskeletal patients. *Health and Quality of Life Outcomes, 3*, Article 82. https://doi.org/10.1186/1477-7525-3-82

Panthee, B., Panthee, S., Shimazu, A., & Kawakami, N. (2020). Validation of the Nepalese version of recovery experience questionnaire. *Heliyon, 6*(4), Article e03645. https://doi.org/10.1016/J.HELIYON.2020.E03645

Park, H. I., Park, Y. A., Kim, M., & Hur, T. (2011a). A validation study of a Korean version of the recovery experience questionnaire. *Korean Journal of Industrial and Organizational Psychology, 24*(3), 523–552. https://doi.org/10.24230/KJIOP.V24I3.523-552

Park, Y. A., Fritz, C., & Jex, S. M. (2011b). Relationships between work-home segmentation and psychological detachment from work: The role of communication technology use at home. *Journal of Occupational Health Psychology, 16*(4), 457–467. https://doi.org/10.1037/A0023594

Parker, D. F., & DeCotiis, T. A. (1983). Organizational determinants of job stress. *Organizational Behavior & Human Performance, 32*(2), 160–177. https://doi.org/10.1016/0030-5073(83)90145-9

Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology, 13*(1), 69–93. https://doi.org/10.1037/1076-8998.13.1.69

Rubio-Valdehita, S., López-Núñez, M. I., López-Higes, R., & Díaz-Ramiro, E. M. (2017). Development of the carmen-q questionnaire for mental workload assessment. *Psicothema*. https://doi.org/10.7334/PSICOTHEMA2017.151

Sanz-Vergel, A. I., Sebastián, J., Rodríguez-Muñoz, A., Garrosa, E., Moreno-Jiménez, B., & Sonnentag, S. (2010). Adaptación del «Cuestionario de Experiencias de Recuperación» a una muestra española. *Psicothema, 22*(4), 990–996.

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & de Witte, H. (2019). An ultra-short measure for work engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment, 35*(4), 577–591. https://doi.org/10.1027/1015-5759/A000430

Shimazu, A., Sonnentag, S., Kubota, K., & Kawakami, N. (2012). Validation of the Japanese version of the recovery experience questionnaire. *Journal of Occupational Health, 54*(3), 196–205. https://doi.org/10.1539/JOH.11-0220-OA

Siltaloppi, M., Kinnunen, U., & Feldt, T. (2009). Recovery experiences as moderators between psychosocial work characteristics and occupational well-being. *Work & Stress, 23*(4), 330–348. https://doi.org/10.1080/02678370903415572

Siltaloppi, M., Kinnunen, U., Feldt, T., & Tolvanen, A. (2011). Identifying patterns of recovery experiences and their links to psychological outcomes across one year. *International Archives of Occupational and Environmental Health, 84*(8), 877–888. https://doi.org/10.1007/s00420-011-0672-1

Sluiter, J. K., de Croon, E. M., Meijman, T. F., & Frings-Dresen, M. H. W. (2003). Need for recovery from work related fatigue and its role in the development and prediction of subjective health complaints. *Occupational and Environmental Medicine, 60*(suppl 1), i62–i70. https://doi.org/10.1136/OEM.60.SUPPL_1.I62

Sonnentag, S. (2015). Dynamics of well-being. *Annual Review of Organizational Psychology and Organizational Behavior, 2*, 261–293. https://doi.org/10.1146/annurev-orgpsych-032414-111347

Sonnentag, S. (2018). The recovery paradox: Portraying the complex interplay between job stressors, lack of recovery, and poor well-being. *Research in Organizational Behavior, 38*, 169–185. https://doi.org/10.1016/J.RIOB.2018.11.002

Sonnentag, S., & Bayer, U. V. (2005). Switching off mentally: Predictors and consequences of psychological detachment from work during off-job time. *Journal of Occupational Health Psychology, 10*(4), 393–414. https://doi.org/10.1037/1076-8998.10.4.393

Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational*

Health Psychology, 12(3), 204–221. https://doi.org/10.1037/1076-8998.12.3.204

Sonnentag, S., & Jelden, S. (2009). Job stressors and the pursuit of sport activities: A day-level perspective. *Journal of Occupational Health Psychology, 14*(2), 165–181. https://doi.org/10.1037/A0014953

Sonnentag, S., & Kruel, U. (2006). Psychological detachment from work during off-job time: The role of job stressors, job involvement, and recovery-related self-efficacy. *European Journal of Work and Organizational Psychology, 15*(2), 197–217. https://doi.org/10.1080/13594320500513939

Sonnentag, S., Binnewies, C., & Mojza, E. J. (2008). "Did you have a nice evening?" A day-level study on recovery experiences, sleep, and affect. *Journal of Applied Psychology, 93*(3), 674–684. https://doi.org/10.1037/0021-9010.93.3.674

Sonnentag, S., Kuttler, I., & Fritz, C. (2010). Job stressors, emotional exhaustion, and need for recovery: A multi-source study on the benefits of psychological detachment. *Journal of Vocational Behavior, 76*(3), 355–365. https://doi.org/10.1016/J.JVB.2009.06.005

Sonnentag, S., Mojza, E. J., Demerouti, E., & Bakker, A. B. (2012). Reciprocal relations between recovery and work engagement: The moderating role of job stressors. *Journal of Applied Psychology, 97*(4), 842–853. https://doi.org/10.1037/A0028292

Sonnentag, S., Cheng, B. H., & Parker, S. L. (2022). Recovery from work: Advancing the field toward the future. *Annual Review of Organizational Psychology and Organizational Behavior, 9*, 33–60. https://doi.org/10.1146/annurev-orgpsych-012420

Strauss-Blasche, G., Ekmekcioglu, C., & Marktl, W. (2000). Does vacation enable recuperation? Changes in well-being associated with time away from work. *Occupational Medicine (Oxford, England), 50*(3), 167–172. https://doi.org/10.1093/occmed/50.3.167

Teleş, M. (2021). Validity and reliability of the Turkish version of the General Work Stress Scale. *Journal of Nursing Management, 29*(4), 710–720. https://doi.org/10.1111/JONM.13211

Trógolo, M., Morera, L., Castellano, E., Spontón, C., & Medrano, L. A. (2020). Propiedades psicométricas del Cuestionario de Experiencias de Recuperación en trabajadores argentinos. *Anales de Psicología / Annals of Psychology, 36*(1), 181–188. https://doi.org/10.6018/ANALESPS.352761

Willmer, M., Jacobson, J. W., & Lindberg, M. (2019). Exploratory and confirmatory factor analysis of the 9-item utrecht work engagement scale in a multi-occupational female sample: A cross-sectional study. *Frontiers in Psychology, 10*, Article 2771. https://doi.org/10.3389/fpsyg.2019.02771

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist, 34*(6), 806–838. https://doi.org/10.1177/0011000006288127

Zijlstra, F. R. H., & Sonnentag, S. (2006). After work is done: Psychological perspectives on recovery from work. *European Journal of Work and Organizational Psychology, 15*(2), 129–138. https://doi.org/10.1080/13594320500513855

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