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Lunch Break Recovery as a Predictor of Work Engagement and Well-Being: The Within-Person Moderating Influence of Harmony

Abstract

Although prior research has demonstrated that extended recovery periods (e.g., weekends or vacations) promote employee well-being and engagement, less attention has been given to short daily recovery experiences, such as lunch breaks. This study examined whether recovery during lunch breaks is associated with daily well-being through work engagement and whether daily harmony moderated this indirect relationship. A five-day diary study was conducted with 40 hospitality employees (N = 200 day-level observations). Multilevel analyses were used to test within-person variations in recovery, work engagement, and well-being across days. As hypothesized, recovery during lunch breaks showed a significant indirect effect on daily well-being through work engagement ($\gamma = 0.17$, 95% CI [0.05, 0.34]). When work engagement was included in the model, the direct effect of lunch break recovery on well-being became non-significant ($\gamma = -0.04$, $p > 0.47$), indicating full mediation. Moreover, daily harmony moderated this indirect pathway ($\gamma = -0.03$, 95% CI [-0.08, -0.01]), such that the association between work engagement and well-being were stronger on days of lower harmony. This study extends recovery and self-regulation theories by showing that brief, routine recovery opportunities-such as lunch breaks-can sustain daily work engagement and well-being, especially under conditions of reduced harmony.

Keywords: Recovery; Harmony; Work breaks; Well-being; Work engagement.

Introduction

The COVID-19 pandemic accelerated the adoption of remote and hybrid work arrangements, fundamentally reshaping how employees structure and experience their workdays (Junça-Silva, 2022a, 2023a). Telecommuting reduces commuting time and increases temporal flexibility, altering not only work patterns but also how employees perceive and use breaks during the workday. As work increasingly takes place at home or in highly flexible environments, breaks are often repurposed for household tasks, caregiving responsibilities, or brief moments of relaxation (Junça-Silva, 2023b). These shifts highlight the growing importance of understanding short, within-workday recovery opportunities and their role in sustaining employee work engagement and well-being.

Recovery breaks play a central role in restoring depleted cognitive, emotional, and physical resources. Even brief periods of rest can replenish energy, reduce strain, and enhance well-being (Steed et al., 2021; Zijlstra & Sonnentag, 2006). Daily activities (such as having a coffee, briefly disengaging from work, or interacting with a companion animal) can facilitate recovery processes (Sonnentag, 2001). Recovery is typically conceptualized as comprising four core experiences: psychological detachment, relaxation, mastery, and control (Sonnentag & Fritz, 2007). These experiences have been consistently linked to improved end-of-day well-being, lower negative affect, and enhanced performance (Bennett et al., 2020; Kim et al., 2017, 2018). Moreover, recent evidence suggested that even unstructured, device-free breaks can restore attention and concentration, reinforcing the importance of short recovery moments embedded within the workday (Abulescu et al., 2022; Ginns et al., 2023).

The present study integrates the Effort–Recovery Model (ERM; Meijman & Mulder, 1998) and Conservation of Resources (COR) theory (Hobfoll, 1989). According to the ERM, sustained job demands generate load reactions that require recovery to restore mental and physical functioning, enabling continued engagement and positive affective states (Sonnentag

et al., 2022). COR theory complements this perspective by emphasizing that recovery processes are shaped by individuals' broader resource contexts. Specifically, personal resources, such as life harmony (which reflects a balanced and integrated relationship with one's life circumstances; Kjell & Diener, 2021), can influence both the availability and effectiveness of recovery experiences (Müller & Weibelzahl, 2026; Zammitti et al., 2026). Employees experiencing lower levels of daily harmony may therefore rely more heavily on lunch break recovery to replenish resources and maintain work engagement, whereas those with higher harmony may be less vulnerable to resource loss during the workday (Hobfoll, 1989; Kjell & Diener, 2021).

Despite its importance, research on lunch break recovery (a structured, routine, and institutionally embedded within-day opportunity for restoration) remains limited. This gap is particularly pronounced in high-demand service contexts such as hospitality, where employees face long working hours, irregular schedules, and sustained interpersonal demands that continuously drain personal resources (Zammitti et al., 2026). Existing recovery research has predominantly focused on off-work periods (e.g., evenings, weekends or vacations), implicitly assuming that meaningful restoration requires extended time away from work (Czakert et al., 2024; Kujanpää & Olafsen, 2024; Liu et al., 2024; Olafsen et al., 2025; Väisänen et al., 2024). Consequently, little is known about whether, how, and for whom short, structured, intra-day breaks such as lunch can effectively replenish resources, enhance work engagement, and improve well-being within the same workday.

Addressing this gap is critical because lunch breaks represent a highly prevalent yet underexamined daily opportunity for recovery, particularly in sectors characterized by high emotional and physical demands. By investigating the dynamic, day-level effects of lunch break recovery and the moderating role of personal resources such as daily harmony, this study seeks to provide a nuanced understanding of how employees can maintain engagement

and well-being amid the pressures of contemporary work environments (Zammitti et al., 2026).

This study advances the recovery literature in three important ways. First, it extends existing research by conceptualizing lunch breaks as a distinct, within-day recovery process rather than a peripheral or incidental activity. Second, it employs a multilevel daily diary design in the hospitality sector, capturing within-person fluctuations across days in a context characterized by high emotional labor, physical demands, and limited recovery opportunities. This approach allows us to examine recovery as a dynamic, day-level process, responding to recent calls for more fine-grained temporal analyses in recovery research (Steed et al., 2021). Third, the study introduces daily harmony as a boundary condition in the recovery – work engagement – well-being process, highlighting how personal resources shape the effectiveness of recovery strategies throughout the workday.

By linking lunch break recovery to work engagement-an affective–motivational state central to employee performance and well-being (Czakert et al., 2024; Liu et al., 2024)-this study also bridges recovery research with the resource gain proposition of COR theory. Grounded in the hospitality context, our findings illustrate how even short, structured breaks can function as meaningful resources that foster engagement and protect well-being under demanding work conditions (Eryalçın et al., 2025; Trépanier et al., 2025). Accordingly, this study tests (1) the mediating role of daily work engagement in the relationship between lunch break recovery and end-of-day well-being, and (2) the moderating role of daily harmony in this indirect relationship. Understanding these dynamics has important implications for workplace behavioral health, informing organizational practices and break policies designed to support effective recovery, sustain work engagement, and enhance employee well-being during the workday (e.g., Haylaji et al., 2025).

Theoretical Framework

Recovery from work

Recovery refers to the "unwinding and restoration processes during which a person's strain level, which has increased as a reaction to a stressor or demand, returns to its pre-stressor level" (Sonnentag et al., 2017, p. 366). Recovery is a critical intervening process linking exposure to job demands with employee health, well-being, and performance-related outcomes (Sonnentag & Fritz, 2007). Without adequate recovery, strain reactions may accumulate, undermining employees' capacity to remain engaged and psychologically healthy (Haylaji et al., 2025; Trépanier et al., 2025).

Recovery can occur both at work and off work, and although these forms are complementary, they differ in timing, duration, and immediacy (de Bloom et al., 2015). At-work recovery refers to short periods during working hours in which employees are temporarily relieved from job demands, such as coffee breaks, informal social interactions, or lunch breaks (Bennett et al., 2020; Geurts & Sonnentag, 2006; Trougakos & Hideg, 2009). In contrast, off-work recovery typically involves longer episodes outside working hours, including evening leisure, exercise, social activities, or vacations, which facilitate psychological detachment, relaxation, mastery, and control (Flaxman et al., 2012; Sonnentag et al., 2017). Given the focus of the present study, we concentrate on at-work recovery, and specifically on lunch breaks as a frequent and institutionally embedded recovery opportunity (Trougakos et al., 2009).

Breaks can be defined as periods during which employees remain at work and subject to future job demands yet are temporarily free from task-related requirements (Hunter & Wu, 2016). Breaks vary in duration, frequency, location, and social norms, and employees may engage in diverse activities during these periods. Importantly, it is not the break per se but the

recovery experiences enacted during breaks that determine their restorative potential (Chan et al., 2022).

According to Sonnentag and Fritz (2007), recovery experiences comprise four core dimensions: psychological detachment (mentally disengaging from work), relaxation (reducing physiological and mental activation), mastery (experiencing learning or challenge), and control (having autonomy over how one spends non-work time). These experiences can occur during at-work breaks, including lunch breaks (Trougakos et al., 2009). For example, employees may experience relaxation by watching a humorous video or meditating, mastery by reading or engaging in cognitively stimulating activities, and control by choosing how and with whom they spend their lunch break (Junça-Silva, 2023b). Psychological detachment may be more difficult to achieve during short breaks, although longer within-day breaks such as lunch may offer greater opportunities for mental disengagement (Bosch et al., 2017; Trougakos et al., 2014).

Lunch breaks are typically the longest within-workday breaks and therefore represent a particularly meaningful opportunity for recovery during the middle of the workday (Krajewski et al., 2010). Empirical evidence indicates that experiencing relaxation, control, and mastery during lunch breaks is associated with greater post-break recovery, lower exhaustion, and higher afternoon engagement (Bosch et al., 2017). These findings suggest that lunch break recovery can play a pivotal role in restoring depleted resources and supporting motivational states during the workday.

Two complementary theoretical frameworks explain why and how lunch break recovery promotes positive work-related outcomes: the ERM (Meijman & Mulder, 1998) and the COR theory (Hobfoll, 1989). The ERM provides a process-oriented explanation, proposing that sustained effort in response to job demands leads to load reactions such as fatigue and strain. Recovery opportunities allow these reactions to dissipate, enabling

employees to return to baseline levels of functioning. Within this framework, lunch breaks serve as short-term recovery episodes that restore energy and reduce strain, thereby facilitating continued engagement and affective functioning (Sonnentag et al., 2022).

COR theory complements this view by emphasizing the role of resource dynamics. According to COR theory, individuals strive to obtain, protect, and replenish valued resources, such as energy, attention, and positive affect (Hobfoll et al., 2018). Resource loss is particularly salient and can trigger stress reactions, whereas resource gains foster well-being and motivation (Haylaji et al., 2025; Trépanier et al., 2025). Lunch break recovery can therefore be understood as a mechanism through which employees prevent further resource loss and restore depleted energetic and affective resources, which are essential for maintaining work engagement (Zammitti et al., 2026).

Work engagement is a positive, motivational state characterized by vigor, dedication, and absorption (Schaufeli et al., 2006), and it fluctuates within individuals across days (Breevaart et al., 2012). Within both ERM and COR perspectives, work engagement represents a key motivational mechanism through which recovered resources translate into positive outcomes (Bakker et al., 2025). Engaged employees report higher levels of happiness, job satisfaction, and overall well-being (Garg & Singh, 2020; Junça-Silva et al., 2017). Accordingly, work engagement can be viewed as a proximal outcome of recovery experiences and a conduit through which recovery affects well-being (Bakker et al., 2023).

Well-being encompasses both affective and cognitive components, including positive and negative affect as well as life satisfaction (Diener, 1984; Diener et al., 2018). Prior research has consistently shown that recovery experiences during work enhance employees' affective states and broader well-being indicators (Junça-Silva, 2022b). Daily restorative activities-such as short breaks, social interactions, or interacting with companion animals-have been linked to greater work engagement and higher life satisfaction (Junça-Silva, 2025).

Taken together, existing evidence demonstrated that recovery experiences during work not only improve well-being outcomes- such as positive affect, mental health, and job satisfaction (Kujanpää & Olafsen, 2024; Olafsen et al., 2025; Sonnentag et al., 2023; Väisänen et al., 2024)- but also support motivational processes that drive performance, particularly work engagement (Bosch et al., 2017; Czakert et al., 2024; Eryalçın et al., 2025; Liu et al., 2024; Steed et al., 2021). Building on these theoretical frameworks and empirical findings, we propose that lunch break recovery replenishes employees' energetic and affective resources, thereby enhancing daily work engagement and, in turn, promoting well-being.

Hypothesis 1: Daily employees' lunch break recovery will be positively associated with their daily well-being, and this relationship will be mediated by the level of work engagement experienced that day.

The moderating role of harmony

The indirect effect of lunch break recovery experiences on daily well-being through daily work engagement is likely to depend on the personal resources employees possess on a given day. One such resource is harmony in life, which reflects a balanced and integrated relationship with one's life circumstances (Kjell & Diener, 2021). Unlike evaluative judgments such as life satisfaction, harmony captures a holistic sense of balance, calmness, and congruence between the individual and their social and environmental context (Kjell et al., 2016, 2018). Individuals experiencing harmony tend to adopt a flexible and accepting stance toward daily experiences, characterized by peace of mind, cognitive flexibility, and mindful acceptance (Müller & Weibelzahl, 2026; Teasdale & Chaskalson, 2011).

Moreover, harmony differs conceptually from satisfaction with life in that it emphasizes balance and acceptance rather than goal attainment or comparison-based

evaluations (Kjell et al., 2016; Müller & Weibelzahl, 2026). As such, harmony represents a cognitive–affective resource that can shape how individuals experience and regulate daily demands at work. When harmony is high, employees may be better equipped to absorb job demands without substantial resource depletion. Conversely, when harmony is lower on a given day, individuals may experience greater vulnerability to strain and a heightened need for resource replenishment.

From a COR perspective, personal resources play a critical role in enabling employees to cope with ongoing job demands and maintain motivation (Zammitti et al., 2026). Thus, we argue that daily harmony influences how employees appraise and utilize lunch breaks as recovery opportunities. Specifically, employees who experience lower harmony during the morning are likely to have lost more cognitive and affective resources (Müller & Weibelzahl, 2026), making them more dependent on lunch break recovery to restore energy, vigor, and motivational states necessary for work engagement. In contrast, employees with higher levels of daily harmony may be less reliant on lunch breaks for recovery, as they possess sufficient internal resources to sustain engagement throughout the day.

Accordingly, harmony may function as a boundary condition that shapes the strength of the indirect effect of lunch break recovery on well-being via work engagement. For employees experiencing lower harmony, lunch breaks may be appraised as particularly meaningful opportunities to regain depleted resources, thereby producing stronger increases in work engagement and, in turn, greater improvements in end-of-day well-being. In contrast, when harmony is high, the incremental benefits of lunch break recovery for engagement and well-being may be weaker, as employees already experience a sense of balance and psychological stability.

Taken together, these arguments suggest that lunch break recovery is especially consequential for employees who lack daily harmony, as recovery experiences help

compensate for depleted personal resources and restore affective–motivational functioning. Accordingly, we hypothesize:

Hypothesis 2: The indirect relationship between lunch break recovery and daily well-being via work engagement will be moderated by daily harmony, such that the mediation will be stronger on days when employees experience lower levels of harmony (versus higher levels) (see Figure 1).

--Figure 1--

Method

Ethical Considerations

This study received ethical approval from the Ethics Committee and was conducted in accordance with the Declaration of Helsinki (2013). Prior to participation, all individuals were informed about the study's objectives, procedures, voluntary nature, and data protection practices. Participants were assured that their responses would remain strictly confidential and anonymous, and that they could withdraw from the study at any time without penalty. Informed consent was obtained electronically before the initial survey, and no personally identifying data were collected.

Participants and Procedure

Data collection occurred in two phases. In the first phase, participants completed a general baseline survey assessing socio-demographic characteristics (i.e., age, gender, working hours, and organizational tenure). One week later, participants entered the daily diary phase. During this phase, they were asked to complete two brief surveys per day over one standard workweek (i.e., five consecutive workdays from Monday to Friday).

The first daily survey was administered during lunchtime at 1:00 p.m. and assessed lunch break recovery experiences and daily perceptions of harmony in life. The second survey

was administered at the end of the workday at 9:00 p.m. and assessed afternoon work engagement and end-of-day well-being. Participants were required to complete the lunchtime survey by 3:00 p.m. and the end-of-day survey by 11:00 p.m.; responses submitted outside these time windows were not permitted. To encourage compliance, two automated reminder emails were sent each day.

This temporal separation between the predictor variables (lunch break recovery and harmony) and outcome variables (work engagement and well-being) was designed to strengthen causal ordering and reduce common method bias (Brewer & Crano, 2000; Podsakoff et al., 2024). All surveys were developed in Portuguese and administered online using Qualtrics, which automatically recorded completion dates and times. Unique coded identifiers were used to match responses across measurement occasions. Data collection took place over approximately four months, from February to June 2023.

Participants were included if they: (a) were employed in hotels located in Lisbon, (b) worked at least 30 hours per week, and (c) were able to complete electronic surveys in Portuguese. Participants were excluded if they: (a) were on extended leave or absent during the data collection week, or (b) had medical or personal circumstances preventing consistent survey completion. These criteria ensured a homogeneous working sample while allowing reliable repeated measures across the workweek.

A total of 50 Portuguese working adults employed in the hospitality sector were invited via email through the researcher's professional network. Of these, 43 participants completed the baseline survey (response rate = 86%). During the diary phase, 42 participants completed at least one daily survey (response rate = 84%), and 40 participants completed all five days of both lunchtime and end-of-day surveys, resulting in 200 matched day-level observations (80% completion rate).

To assess whether attrition was systematic, we compared the three participants who did not complete all diary entries with the 40 completers on baseline measures of lunch break recovery, work engagement, and well-being. Little's MCAR test indicated that missing data were missing completely at random ($\chi^2 = 2.45$, df = 5, p = .78), and no significant differences were observed between completers and non-completers (all ps > .10), suggesting that attrition was unlikely to bias the results.

Although a formal a priori power analysis for multilevel mediation was not conducted prior to data collection, the sample size was deemed appropriate for the study's within-person, multilevel analytic framework. In intensive longitudinal designs, statistical power is largely driven by the number of Level-1 observations (i.e., daily measurements) rather than solely by the number of Level-2 units (i.e., participants), particularly when the focus is on within-person effects (Bolger & Laurenceau, 2013; McNeish & Stapleton, 2016).

To further inform sample size adequacy, we conducted an a priori power analysis using G*Power 3.1 (Faul et al., 2009). Because G*Power does not support multilevel or within-person mediation models, the analysis was based on a conservative approximation using a standard linear regression framework for detecting within-person effects. Assuming a medium effect size ($f^2 = .15$), an alpha level of .05, and power of .80, the analysis indicated that a minimum of 77 observations would be required to detect a main effect. The present study included 200 day-level observations, exceeding this threshold. We acknowledge that this approximation does not capture the full complexity of the multilevel mediation model, and small effects should be interpreted cautiously. Nonetheless, the combination of repeated daily measurements and multilevel modeling provides reasonable power to detect within-person associations.

Participants worked in hotels located in Lisbon and typically took their lunch breaks in communal or semi-private spaces provided by their organizations, such as staff break rooms

or shared cafeterias; some occasionally took their breaks in nearby outdoor or public spaces. The sample was predominantly female (85%), with a mean age of 31.72 years (SD = 12.51) and an average organizational tenure of 8.30 years (SD = 9.79).

Regarding education, 60% of participants held a bachelor's degree, 20% had completed high school, 17.5% held a master's degree, and 2.5% reported basic education. In terms of job roles, 45% occupied managerial positions, followed by marketing specialists (22.5%), administrative staff (17.5%), and frontline service employees (7.5%).

Measures

General Survey

A general survey was conducted to collect socio-demographic data (e.g., gender, age, tenure, education level). This survey was only collected once, and it was the first to be collected out of the five questionnaires.

Daily Survey

All scales were shortened to reduce participant burden in the daily diary context. The items were selected based on their high item-total correlations and representativeness of the core construct, and each abbreviated scale has been used successfully in prior diary research (Junça-Silva, 2023b; Kjell et al., 2018; Schaufeli et al., 2017). Reliability and validity of the abbreviated scales were examined in the current sample, and all demonstrated adequate internal consistency at both within- and between-person levels.

Recovery during lunchtime

Recovery during lunchtime was measured by a 4-item scale developed by Sonnentag and Fritz (2007). A sample item is "Today, during my lunch break, I did not think about work at all" or "Today, during my lunch break, I used the time to relax". The items were answered using a 5-point Likert scale ranging from 1 ("*strongly disagree*") to 5 ("*strongly agree*").

Reliability in the current sample was satisfactory at the within-person level (α = .85) and between-person level (α = .90).

Work engagement

We used the Ultra-short measure of Work Engagement (Schaufeli et al., 2017). It included three items (e.g., "Today, I felt enthusiastic with my work."). Participants also used a 5-point Likert scale to answer (1 - "*never*"; 5 - "*always*") (α = 0.79). Reliability in the current sample was α = .79 (within-person) and α = .84 (between-person).

Well-being

We used the abbreviated version of the satisfaction with life scale (Kjell & Diener, 2021) to capture the cognitive component of well-being, reflecting participants' global evaluation of life satisfaction. It included three items (e.g., "Today I am satisfied with my life."). This was answered on a 5-point Likert scale, where participants responded from 1 ("*strongly disagree*") to 5 ("*strongly agree*"). Reliability in this study was α = .87 (within-person) and α = .93 (between-person).

Harmony

Harmony was measured through the abbreviated scale of harmony in life (Kjell & Diener, 2021). It included three items (e.g., "Today, my lifestyle allowed me to be in harmony"). Participants were also asked to respond on a 5-point Likert scale from 1 ("*strongly disagree*") to 5 ("*strongly agree*"). Reliability in the present study was α = .92 (within-person) and α = .95 (between-person).

Control variables

We included time of data collection (Monday to Friday) as a Level 1 control variable to account for potential day-of-week effects, as employees' engagement and well-being may fluctuate across the workweek. At Level 2, we controlled for participants' age and sex, since prior research indicates that both factors can influence work engagement and well-being

(Junça-Silva, 2022b). Controlling for these variables allows us to isolate the effects of lunch break recovery and daily harmony on engagement and well-being, ensuring that the observed relationships are not confounded by demographic or temporal factors.

Data analysis

All analyses were conducted in two stages. Preliminary factorial analyses were performed using JASP to ensure measurement validity. The multilevel moderated mediation model was tested in SPSS using the MLMed macro (Rockwood, 2020), which is specifically designed for multilevel mediation and moderation analyses.

Given the nested structure of the data - daily observations (Level 1) nested within individuals (Level 2) - we first estimated intraclass correlation coefficients (ICCs) for the key variables: lunch break recovery, daily work engagement, daily well-being, and daily harmony (Hox, 2013). The ICCs were as follows: lunch break recovery = .50, work engagement =.26, well-being = .61, and harmony = .77. These values indicate that recovery and engagement exhibited substantial within-person variability, whereas well-being and harmony were primarily stable between individuals. This variability justifies the use of a multilevel modeling approach to capture both within- and between-person effects.

Prior to conducting the multilevel analyses, we assessed normality assumptions for all study variables at both the within-person (day-level) and between-person (individual-level) levels. Skewness and kurtosis values were within acceptable ranges (absolute skewness < 2, absolute kurtosis < 7; Kline, 2016), indicating that the assumption of univariate normality was adequately met. This ensures that the maximum likelihood estimation used in MLmed is appropriate and robust.

Next, we examined whether random slopes were warranted by testing whether the relationship between lunch break recovery and work engagement varied significantly across participants. Results indicated that allowing random slopes did not significantly improve

model fit (Δ-2LL = 1.82, p = .40), suggesting that a fixed slope model was sufficient to represent the recovery–engagement relationship in this sample. Variance components for all predictors and outcomes are reported in the Results section.

The multilevel moderated mediation model estimated: (a) the within-person indirect effect of lunch break recovery on daily well-being via work engagement, and (b) the moderating effect of daily harmony on this indirect relationship. Daily predictors (recovery and harmony) were group-mean centered to isolate within-person effects, whereas between-person variability was accounted for using grand-mean centering for Level-2 covariates. Confidence intervals for indirect effects were calculated using Monte Carlo simulations provided by the MLMed macro, which is suitable for multilevel mediation with small-to-moderate Level-2 sample sizes (Bolger & Laurenceau, 2013; Rockwood, 2020).

Finally, the analytical strategy benefits from the intensive longitudinal design, as the repeated measures (200 Level-1 observations) provide sufficient power to detect within-person effects, even with a relatively small number of participants at Level 2 (n = 40). This approach is consistent with methodological guidance indicating that power in multilevel diary studies is primarily driven by the number of observations at Level 1 (McNeish & Stapleton, 2016), and it aligns with the a priori G*Power approximation discussed in the Methods section.

Results

Common method bias and multicollinearity issues

To assess the presence of common method bias (CMB) and confirm the independence and validity of our constructs, we conducted a series of confirmatory factor analyses (CFA) using JASP. We compared three models to evaluate construct distinctiveness and model fit (Hair et al., 2010). Model 1 was the hypothesized four-factor model, with separate scales for recovery during lunch, work engagement, harmony, and well-being. Model 2 combined work

engagement, harmony, and well-being into a single factor, while Model 3 loaded all items onto a single factor. Model fit was evaluated using multiple indices: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA), with good fit indicated by CFI and TLI > .90 and SRMR and RMSEA < .08 (Schreiber et al., 2006).

The four-factor model demonstrated the best fit (CFI = .95, TLI = .93, SRMR = .05, RMSEA = .08), providing evidence of discriminant validity. Standardized factor loadings for all items ranged from .62 to .87, and error variances were within acceptable limits, supporting unidimensionality and convergent validity.

To further assess common method bias, we conducted a Common Latent Factor (CLF) test by adding a latent factor onto which all observed items loaded, in addition to their respective constructs. The results indicated that the variance explained by the CLF was minimal (<5%), suggesting that common method bias was unlikely to have substantially influenced the findings. Additionally, Cronbach's alpha coefficients for all scales exceeded 0.70, indicating satisfactory internal consistency. These results confirm that the short form measures reliably captured the intended constructs, CMB is unlikely to have substantially influenced the findings, and the data were suitable for hypothesis testing (see Table 1).

--Table 1--

Descriptive Statistics

Table 2 presents the descriptive statistics and correlations among the study variables at both the within-person (Level 1) and between-person (Level 2) levels. Overall, the variables showed adequate variability across days and individuals. Examination of the distributions indicated that skewness and kurtosis values for all variables were within acceptable limits (±2; George & Mallery, 2010), suggesting no significant departures from normality.

--Table 2--

Hypotheses testing

Following the recommendations of Griep et al. (2022), we first evaluated model fit using the Bayesian Information Criterion (BIC) to balance model complexity and fit. The multilevel moderated mediation model showed the lowest BIC (BIC = 574.60), indicating the best fit to the data. Coefficients from the multilevel analyses are presented in Figure 2.

--Figure 2--

As hypothesized, recovery during lunch had a significant indirect effect on daily well-being through work engagement (γ = .17, 95% CI [.05, .34]), while the direct effect of lunch recovery on well-being was non-significant (γ = -.04, p = .47), indicating full mediation (R^2 =.17). Therefore, Hypothesis 1 was supported.

The analysis also revealed a significant moderated mediation effect, with daily harmony moderating the indirect relationship between lunch recovery and well-being via work engagement (γ = -.03, 95% CI [−.08, −.01]). As illustrated in Figure 3, the association between work engagement and well-being was stronger for individuals experiencing lower levels of daily harmony. Simple slopes analyses, following Dawson and Richter (2006), confirmed that the indirect effect of lunch recovery on well-being through work engagement was amplified for individuals with lower harmony compared to those with higher harmony. These results collectively demonstrate that recovery during lunch enhances daily work engagement, which in turn promotes well-being, particularly when employees experience lower levels of daily harmony. Thus, Hypothesis 2 was supported.

--Figure 3--

Discussion

This study examines how and under what conditions recovery during lunch breaks contributes to employees' daily levels of well-being. Drawing on the ERM (Meijman & Mulder, 1998) and COR theory (Hobfoll, 1989), we propose that lunch break recovery

replenishes depleted cognitive and emotional resources, thereby enhancing work engagement, which subsequently promotes daily well-being. Additionally, we hypothesize that daily experienced harmony moderates this indirect relationship by shaping how effectively employees capitalize on recovery opportunities.

The multilevel results support these assumptions. Recovery during lunchtime is positively associated with work engagement, indicating that short, mid-day recovery moments help employees regain energy, motivation, and concentration - key components of work engagement (Schaufeli et al., 2002; 2017). This finding aligns with recent research demonstrating that within-day recovery activities foster next-day work engagement and emotional vitality (Czakert, Ureña, & Berger, 2024; Kujanpää & Olafsen, 2024). Work engagement, in turn, predictes higher end-of-day well-being, echoing prior evidence that engaged employees report lower strain and greater affective balance at the end of the workday (Liu et al., 2024; Müller & Weibelzahl, 2026; Olafsen, Kujanpää, & Bentzen, 2025).

Specifically, our findings reveal that this indirect relationship is contingent upon employees' daily levels of harmony. Specifically, the positive effect of lunch break recovery on well-being via work engagement is stronger on days when employees experience lower harmony. This suggests that harmony operates as a personal resource that influences how employees mobilize recovery opportunities to offset strain (Müller & Weibelzahl, 2026). On days when employees feel less balanced or aligned across life domains, recovery moments such as lunch breaks become more critical for restoring depleted resources and sustaining well-being (Zammitti et al., 2026). This finding expands the COR framework by highlighting daily harmony as a dynamic boundary condition that regulates resource gain processes (Hobfoll, 2011; Kjell & Diener, 2021).

Theoretical implications

This study contributes to the recovery and well-being literature by deepening understanding of how and when lunch breaks function as effective recovery opportunities in daily work life - a topic that remains underexplored despite its theoretical and practical relevance (Krajewski et al., 2010; Kujanpää & Olafsen, 2024; Steed et al., 2021). Whereas most recovery research has focused on after-work or weekend recovery (Sonnentag & Fritz, 2007; Bennett et al., 2017), our findings highlight intra-day recovery - specifically, recovery during lunchtime - as a critical mechanism for maintaining engagement and well-being throughout the workday.

From a theoretical standpoint, this research extends recovery theory in several ways. First, it advances understanding of within-workday recovery, a relatively neglected domain compared to recovery outside of work (Sonnentag & Fritz, 2007; Steed et al., 2021). By focusing on lunch breaks, the study identifies a short, routine period that enables employees to replenish psychological and physiological resources in real time. This aligns with emerging evidence showing that even micro-recovery episodes - such as 10–15-minute breaks - can significantly affect engagement and affective well-being (Ginns, Muscat, & Naylor, 2023; Kim et al., 2018).

Second, the findings integrate insights from the ERM (Meijman & Mulder, 1998) and COR theory (Hobfoll et al., 2018), showing that lunchtime recovery replenishes depleted energy and cognitive resources necessary for sustained engagement and positive affect. Lunch breaks thus represent pivotal points in the daily resource restoration cycle, demonstrating that recovery opportunities embedded within the workday - not only after work - are essential for ongoing well-being. Consistent with prior research, recovery experiences emphasizing psychological detachment, relaxation, and control are particularly effective for restoring engagement-related resources (Abulescu et al., 2022; Bennett et al., 2017; Chan et al., 2022).

These results reinforce the view that structured, autonomy-supportive breaks can sustain energy and performance across the day (Czakert et al., 2024; Ginns et al., 2023).

Third, the study contributes to the integration of ERM and COR perspectives, demonstrating that daily recovery acts as a proximal resource that enhances work engagement - a motivational pathway central to performance and well-being (Bakker & Demerouti, 2017; Czakert et al., 2024). Importantly, our results identify daily harmony as a boundary condition that regulates the effectiveness of lunch break recovery. The indirect effect of recovery on well-being via work engagement is stronger on days when harmony is low, suggesting that employees with fewer daily resources rely more on short recovery opportunities to sustain their work engagement and prevent well-being deterioration. This expands COR theory by conceptualizing harmony as a dynamic personal resource shaping daily resource gain cycles (Hobfoll, 2011; Kjell & Diener, 2021). Moreover, it suggests that recovery experiences such as lunch breaks can serve compensatory functions, helping employees cope with high daily demands when other personal resources are temporarily depleted (Trépanier et al., 2025).

Finally, this study adds contextual depth by examining recovery processes in the hospitality sector, a setting characterized by emotional labor, interpersonal strain, and limited recovery opportunities (Väisänen et al., 2024). By situating the analysis in this demanding context, the study illustrates how organizational structures and work routines influence access to and benefits from recovery opportunities, enriching theoretical understanding of how resource dynamics unfold in service-intensive environments (Zammitti et al., 2026).

Overall, this research advances theory by (1) emphasizing within-day recovery as a key mechanism for sustaining engagement and well-being; (2) integrating ERM and COR frameworks to highlight how daily resources interact to shape recovery effectiveness; and (3) contextualizing recovery within high-demand service work, underscoring that even ordinary,

short breaks - like lunch - can play an extraordinary role in the daily conservation and renewal of employee resources.

Practical implications

This study provides actionable insights for organizations aiming to enhance employee engagement and well-being through effective recovery during lunch breaks. The findings highlight that lunch breaks are not merely routine pauses but important opportunities for psychological detachment and energy restoration, consistent with the Effort-Recovery Model and COR theory (Hobfoll et al., 2018).

From a managerial perspective, fostering a recovery-supportive climate is essential. Managers can encourage employees to take uninterrupted breaks, signal that recovery is valued, and model these behaviors. Simple initiatives—such as providing comfortable or outdoor spaces and ensuring predictable schedules—can be especially beneficial, particularly in resource-constrained sectors like hospitality.

Equitable access to recovery opportunities is also crucial. Frontline and shift workers should have the same opportunities for restorative breaks, which can be supported through workload balancing, task rotation, and consistent break policies. These practices help prevent burnout and reinforce organizational commitment to well-being. Additionally, the findings emphasize the role of daily harmony between work and personal life in strengthening recovery. Organizations can support this through flexible scheduling, autonomy-supportive practices, and leadership behaviors that respect work–nonwork boundaries. Overall, promoting effective recovery is a low-cost strategy that supports employee well-being, engagement, and retention, while contributing to a more sustainable and human-centered work environment.

Limitations and Future Directions

This study has several limitations that should be considered when interpreting the findings. First, we relied on a non-probabilistic, convenience sample of hospitality workers in Lisbon, which limits the representativeness of the Portuguese working population and the generalizability of the results. Data were collected via online daily questionnaires, which contributed to participant attrition. Although attrition analyses and Little's MCAR test indicated no systematic differences between completers and dropouts, the relatively small sample size (N = 40) may still constrain the robustness of the findings. Future research should replicate this study with larger and more diverse samples to confirm the observed relationships.

Second, the study did not systematically capture or control for the specific activities participants engaged in during their lunch breaks, such as relaxing, socializing, or engaging in cognitive tasks, nor did it account for environmental characteristics such as privacy, noise level, accessibility of restorative spaces, companionship (human or non-human), or the duration of the lunch period. These factors may influence the quality and effectiveness of recovery, and consequently, the extent to which lunch breaks impact work engagement and well-being. Future research should assess and control for both the type of lunch break activities and contextual environmental variables to enhance ecological validity and provide a more nuanced understanding of how different recovery experiences shape daily work-related outcomes.

Third, all measures were self-reported within a short timeframe, which may raise concerns regarding common method bias. To address this, we conducted confirmatory factor analyses comparing a four-factor model (recovery, work engagement, harmony, and well-being) against one- and two-factor alternatives. The four-factor model demonstrated the best fit, supporting discriminant validity and suggesting that CMB is unlikely to have substantially

influenced the results. Nevertheless, future studies could incorporate objective or multi-source measures to further strengthen the robustness of the findings.

Fourth, given the correlational nature of the multilevel diary design, causal inferences should be made with caution. Although the temporal separation between predictors and outcomes within the same day offers some protection against common method concerns, it does not preclude reverse causality (e.g., more engaged employees perceiving their breaks as more restorative) or unmeasured confounds, such as workload, sleep quality, or momentary affect. Therefore, the present results should be interpreted as associative rather than causal. Future research could employ cross-lagged or experimental designs to better establish the directionality and mechanisms underlying the observed relationships.

Finally, the study controlled only for basic demographic variables (age, gender) and day of the week. Other potential confounders, such as workload, organizational support, or task complexity, were not included and could be explored in future research. It would also be valuable to examine shorter micro-breaks (5–15 minutes) and gather perspectives from both employees and employers to better understand the conditions under which short-term recovery supports work engagement and well-being.

Conclusions

This study contributes to a relatively underexplored area in organizational behavior - the role of lunch breaks as meaningful within-workday recovery opportunities. Drawing on the ERM and COR theory, our findings demonstrate that effective recovery during lunchtime enhances employees' work engagement and, in turn, their daily well-being. Specifically, the results suggest that when employees use their lunch breaks to relax, detach, and replenish their resources, they return to work more energized, engaged, and satisfied. Moreover, the moderating role of daily harmony highlights that employees with lower harmony - those

experiencing less balance between work and personal life - derive greater benefits from recovery opportunities, as these moments help compensate for limited personal resources.

At the same time, it is important to acknowledge key limitations. The study does not systematically measure the specific activities employees engaged in during lunch breaks (e.g., socializing, cognitive tasks, or relaxation), nor did it account for environmental factors such as privacy, noise, or companionship, which may influence the quality of recovery. In addition, the relatively small sample size and the specific hospitality-sector context may limit the generalizability of the findings. Future research should examine these factors to provide a more nuanced understanding of how lunch break experiences shape work engagement and well-being across diverse organizational settings.

Overall, this research advances recovery theory by identifying short, intra-day recovery episodes as critical mechanisms for maintaining engagement and affective balance throughout the workday. It also offers actionable insights for organizations, particularly in resource-intensive sectors such as hospitality, emphasizing the importance of fostering recovery-supportive environments that enable employees to genuinely disconnect and restore their resources during breaks. By doing so, organizations not only promote employee well-being but also sustain work engagement and performance in the long term.

i) **Conflict of interest statement**: The authors declare that they have no conflicts of interest.

ii) **Compliance of ethical standard statement:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

iii) **Informed consent:** Informed consent was obtained from all individual participants involved in the study.

iv) **Data availability**: The data is available only upon reasonable request to the authors.

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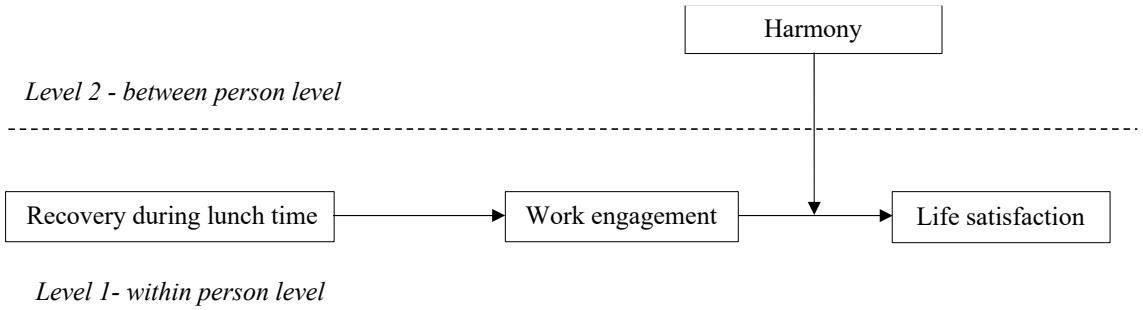
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Figure 1.

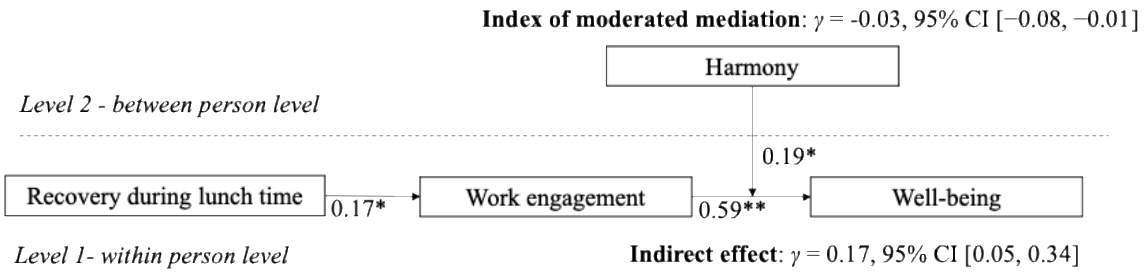
The proposed conceptual model.



Source: Authors' own work.

Figure 2.

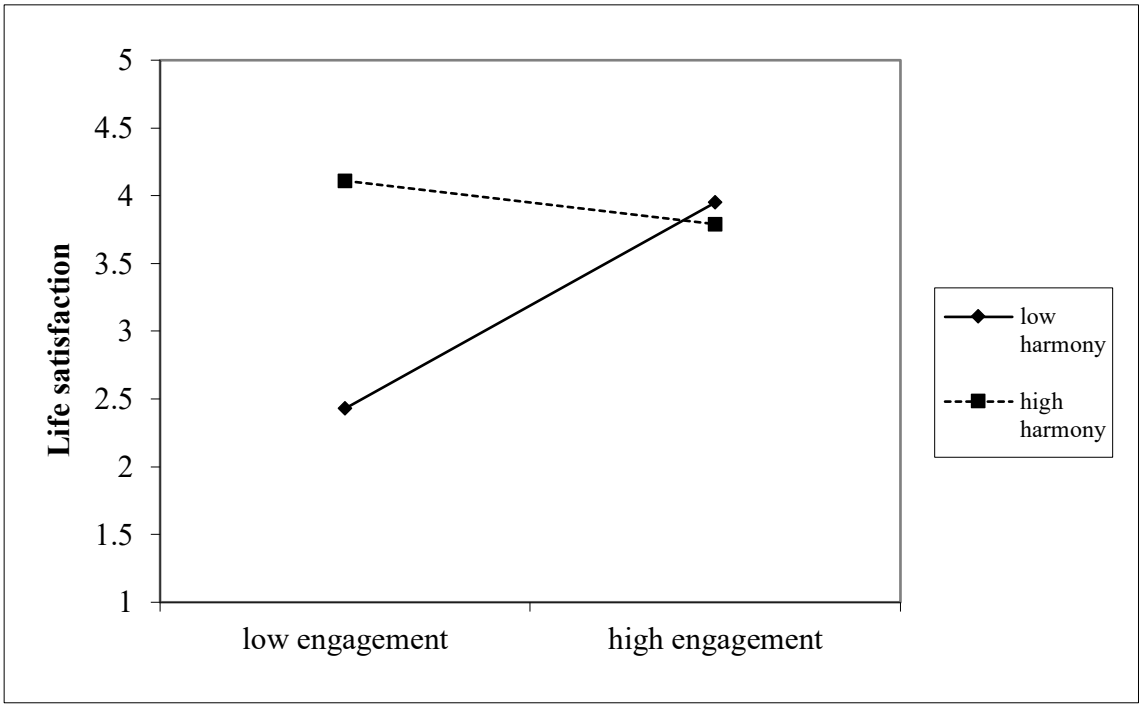
Multilevel moderated mediation results.



Source: Authors' own work.

Figure 3.

The interaction effect between work engagement and harmony regarding well-being



Source: Authors' own work.

Table 1.

Confirmatory factor analysis results

Models	$\chi 2$	df	CFI	TLI	RMSEA	SRMR
Model 1	*113.51*	*48*	*0.95*	*0.93*	*0.08*	*0.05*
Model 2	245.14	53	0.86	0.82	0.13	0.07
Model 3	373.914	54	0.76	0.71	0.17	0.09

Note. RMSEA: root mean square error of approximation; CFI: comparative fit index; TLI: Tucker-Lewis's index; SRMR: standardized root mean square residual.

The model that provided the best fit is in italics.

M1: Recovery during lunch time, work engagement, harmony, and well-being were placed in a latent four-factor model comprising separate scales.

M2: Work engagement, well-being, and harmony were placed in a latent two-factor model.

M3: All variables (recovery during lunch time, work engagement, harmony, and well-being) were placed in a latent single factor.

Source: Authors' own work.

Table 2.

Means, standard deviations, Pearson's correlations, and internal consistencies.

Variable	*M*	*SD*	CR	AVE	MSV	1	2	3	4	5
1. Recovery	3.14[1]	0.88	.89	.73	.30	(.85)				-
2. ENG	3.27[1]	0.70	.83	.63	.37	.509**	(.79)			-
3. Well-being	3.18[1]	0.83	.91	.77	.47	.385**	.566**	(.87)		-
4. Harmony	3.36	0.83	.95	.86	.47	.545**	.605**	.686**	(.92)	-
5. Time	3.01	1.43	-	-	-	.041	-.001	.058	.042	-
6. Age			-	-	-					-
7. Sex[2]	-	-	-	-	-	-	-	-	-	-

Note: Pearson correlation presented below the diagonal (N = 200). The remaining values present: $N = 40$

$^{*}p < 0.05$. $^{**}p<0.01$. $^{***}p < 0.001$.

[1]Scale ranging from 1 to 5.

[2] Sex codes: 1 – male; 2 – female

The square roots of the Average Variance Extracted (AVE) are in brackets. M = Mean; SD = Standard deviation; AVE = Average Variance Extracted; MSV = Maximum Shared Variance. CR = Composite Reliability. ENG = Work engagement.

Source: Authors' own work.