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I Need a Vacation: A Meta-Analysis of Vacation and Employee Well-Being

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Previous meta-analytic research concluded that the well-being benefits of vacation are small and fade away quickly, suggesting that vacation may not be that effective of a recovery opportunity for improving employee well-being. Since the time of this initial meta-analysis, however, the number of vacation studies has increased, providing an opportunity to estimate more precise meta-analytic estimates and increase our understanding of the different factors that play a role in this vacation–well-being relationship. As such, we conduct a meta-analysis using 32 studies that include 256 effect sizes to examine how employee well-being levels change due to vacation. Our results reveal that vacation has a large effect on well-being that does not fade out as quickly as previously thought. In terms of moderators, our results suggest that vacation length, national culture, and number of nationally mandated vacation days moderate this relationship, but the role of vacation location (i.e., away from home, at home, or a mix of both) remains unclear. Finally, we examine how types of activities and specific recovery experiences during vacation correlate with well-being during and after vacation using a meta-analysis of eight studies that include 69 effect sizes. Our findings suggest that psychological detachment and physical activities during vacation may be the most beneficial for improving employee well-being. Overall, this meta-analysis provides evidence that vacation is a more effective recovery opportunity for improving employee well-being than previous work suggests.

Keywords: vacation, well-being, meta-analysis, recovery, recovery experiences

When work stress begins to mount, a common phrase comes to mind for many workers: *I need a vacation*. Needing this time off from work to recuperate from the effects of job stress is becoming increasingly important. Recent trends suggest that individuals are not only working more hours than ever before, but also facing an increasing number of job demands (Anttila et al., 2021; DeFilippis et al., 2020; Richardson, 2017). However, job demand trends are juxtaposed with vacation use trends. Over the past 30 years, vacation use has declined at least in the United States, with many American employees not using their available vacation days each year (U.S. Travel Association, 2019). In fact, in 2018, American workers left 768 million vacation days unused, which equated to $65 billion in lost benefits for workers (U.S. Travel Association, 2019). Thus, despite the *need* for a vacation being high, vacation usage appears to be decreasing.

These vacation use trends are troubling as sustained work effort across multiple months that is not broken up by routine vacations can lead to a lack of adequate recovery and a buildup of strain, which can develop into more serious physical (e.g., cardiovascular disease) and mental (e.g., depression, burnout) health issues (Ganster & Rosen, 2013). Recovery is defined as the restoration processes where individuals reduce strain levels from stressors and demands at work to baseline levels and restore lost resources (Sonnentag et al., 2017, 2022). Recovery has been linked to several positive well-being and organizational outcomes, including lower fatigue, better sleep, higher work engagement, and improved job performance (Bennett et al., 2018; Headrick et al., 2022; Steed et al., 2021). Despite this growing body of research, recovery has mainly been studied on a short-term basis (e.g., recovery on evenings and weekends), although there is a growing body of work that focuses on longer time periods, such as vacations, broadly defined as a less frequently occurring, extended time away from work, ranging from a few days to several weeks, with the purpose of engaging in leisure, recreation, and rest (Lounsbury & Hoopes, 1986; Yan et al., 2023).

Previous research has examined how well-being changes from before a vacation to during a vacation (i.e., the vacation effect), from

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The syntax for this research and additional online materials are publicly available on the Open Science Framework at https://osf.io/w6khg/?view_only=ff0eab5990004054bdcb6aa9191d9f83. Some aspects of this research were presented in a poster presentation at the 38th conference for the Society of Industrial and Organizational Psychology (2023).

The authors have no known conflicts of interest to disclose. This article is published in the memory of Beth E. Buchanan, whose life was tragically taken by a drunk driver as we were in the writing phases of the article. A promising graduate student, Beth E. Buchanan's research interests surrounding the intersection of work and nonwork domains stemmed from a desire to help others and improve people's lives. We aim to honor that legacy through this work.

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during a vacation to the first measurement upon the return to work after a vacation ends (i.e., the return effect), from before a vacation to the first measurement after vacation (i.e., the after effect), and to multiple measurement points during the weeks after a vacation ends to examine trends in how well-being benefits tend to decrease after the vacation (i.e., the fade-out effect). de Bloom et al. (2009) examined the after effect meta-analytically, estimating an effect size of $d = .43$, suggesting that vacation has a small positive effect on well-being. However, they also concluded that these small positive effects tend to disappear quickly after returning to work, as they found a fade-out effect of $d = -.38$, suggesting that vacations' benefits for well-being are fleeting.

While these initial findings are informative, an update on the meta-analytic relationship between vacation and employee well-being is needed for multiple reasons. First, since the time of de Bloom et al.'s (2009) publication, the number of studies amenable to meta-analysis in the vacation literature has increased greatly from $k = 7$ to 32, providing an opportunity to provide a more precise estimate of these relationships. Second, more recent primary studies have become more sophisticated and often include a measure of well-being during a vacation period as well as the weeks after the vacation has ended, allowing for examination of the vacation effect (which de Bloom et al. could not examine) and the fade-out effect (which de Bloom et al. tested with only four studies). Thus, an updated meta-analysis to reflect the current literature allows for a more comprehensive understanding of vacations. With this in mind, we reestimate meta-analytically the relationships examined by de Bloom et al. (the after effect and fade-out effect) with a larger number of primary studies and effect sizes (32 studies with 256 effect sizes) and include the previously unexamined relationships of the vacation and return effects. These analyses are based only on longitudinal, repeated measures studies to properly assess change over time.

Additionally, we extend de Bloom et al.'s study by examining theoretically meaningful contextual factors that may impact vacation–well-being relationships. Specifically, we examine how the content of one's vacation, namely, the psychological recovery experiences (i.e., mastery, relaxation, control, and psychological detachment; Sonnentag & Fritz, 2007) and activities (physical, social, and passive) they engage in during vacation relate to well-being during and after vacation. Additionally, we test four variables at the study level—average length of the vacation, location of vacation, nationally mandated vacation days, and national culture—as moderators of the size of the vacation, return, after-, and fade-out effects. Examining these contextual variables is vital as the lack of basic understanding of which characteristics make vacation more (or less) beneficial renders us unable to provide specific recommendations regarding where, how, and for how long employees should be vacationing, as well as whether effects are consistent across different national contexts with varying values and norms. Testing moderators also helps build more precise theory by contributing knowledge about the boundary conditions of the vacation–well-being relationship (Bacharach, 1989; Gonzalez-Mulé & Aguinis, 2018).

As a final note, our extension of de Bloom et al.'s (2009) study also includes methodological advances. de Bloom et al. created composites of the effect sizes by averaging all of the well-being effect sizes in each study. This approach has limitations, including reduced power and estimating less precise parameter estimates (Cheung, 2014). The authors also did not use an approach that accounts for sampling error or measurement error, instead only using an arithmetic average of the effect sizes they coded, which provides a less precise estimate of the true meta-analytic effect. To remedy these issues, we apply meta-regression with robust variance estimation (RVE), a method that provides more accurate estimations of meta-analytic effects sizes for dependent, repeated measures data that are common in the vacation literature (Hedges et al., 2010; Pustejovsky & Tipton, 2022).

Theoretical Background

The beneficial effects of recovery are theoretically based on the effort-recovery model (ERM, Meijman & Mulder, 1998) and conservation of resources (COR) theory (Hobfoll, 1989). The ERM states that the demands of work require individuals to exert effort daily, which activates their psychophysiological systems. As one is repeatedly exposed to job demands that require effort, this results in their psychophysiological systems remaining activated at a high level. When this occurs, the ERM posits that load reactions in the form of acute physiological (e.g., stress hormone release, increased heart rate) and psychological (e.g., fatigue, impaired mood) strain symptoms arise. For recovery to occur, the ERM states that one's psychophysiological systems must return to prejob stress levels, which occurs primarily through the removal of stressful work demands. In turn, this allows load reactions to be reversed, reducing fatigue and allowing for energy to be restored. Over time, if these load reactions are left unchecked, they manifest into more harmful load effects. If these load effects are not diminished through recovery, this leads to a cyclical process whereby individuals must exert compensatory effort at work, which can lead to chronic health issues and increased risk for disease (McEwen, 1998). Overall, the ERM mechanism suggests that recovery occurs when one is no longer exposed to work demands that raise activation levels of the psychophysiological systems.

While the ERM focuses on ceasing work demands, the COR mechanism focuses on how employees recover by restoring, maintaining, and building resources. For the COR mechanism, recovery outside of work occurs through resource replenishment (e.g., energy, positive mood) that was depleted by work demands. If individuals do not restore these lost resources, health, well-being, and performance are harmed over time. Individuals restore and build new resources through recovery leisure activities (e.g., playing a sport; socializing with friends) that are underpinned by psychological recovery experiences (Sonnentag & Fritz, 2007). COR theory also states that individuals with a greater pool of resources are better positioned to invest those resources for further resource gains (Halbesleben et al., 2014; Hobfoll et al., 2018). Applied to vacations, an individual who restored energy earlier in the vacation by relaxing on the beach will have more energy to go on a hike later in their vacation. As one continually invests and gains more resources, this leads to a cycle of resource investment and accumulation, which COR deems a resource gain cycle (Hobfoll et al., 2018). Over time, these resource gain cycles have a compounding effect, and this increased resource pool enhances well-being as it increases an individual's perception that they possess a large number of valued resources (Hobfoll, 2002; Reis et al., 2015). However, COR theory notes that resource loss cycles can occur as well, whereby resource loss begets future resource loss (Hobfoll, 1988; Hobfoll et al., 2018). This is similar to the ERM load effect accumulation process, whereby insufficient recovery leads to even further compensatory effort required at work, intensifying resource loss and increasing fatigue.

When integrated together, the ERM and COR mechanisms explain the unique well-being benefits of vacation, which differ from short-term recovery opportunities. In terms of the ERM mechanism, vacations provide employees an opportunity to be free from work-related demands and stress for an extended period of time. This allows one's psychophysiological systems to return to and stay at baseline, which stops load effects (e.g., fatigue) from building up and protects individuals from further resource loss during the vacation. This is akin to halting the resource loss cycle as theorized in COR. In turn, being in this state makes the COR mechanism of restoring and building new resources (e.g., energy, positive affect) more effective because resources are no longer being depleted by work. This allows individuals to continually build resources during vacation, as they are not using resources to offset the negative effects of job demands but rather grow their resource pool (Hobfoll, 2002). As an individual's resource pool grows through resource-providing experiences (e.g., spending time with family, engaging in preferred enjoyable activities, relaxing) during vacation, they are more likely to invest resources into gaining even more resources (Halbesleben et al., 2014; Hobfoll et al., 2018). This results in a resource gain cycle that leads to improvements in well-being over the course of a vacation.

Given the above theoretical reasoning for vacations, we focus primarily on the link between vacation and two broad classes of employee well-being: psychological (e.g., burnout, negative affect, positive affect, life satisfaction) and psychosomatic well-being (e.g., headaches, sleep quality, general somatic health complaints).[1] Along with providing separate analyses of psychological and psychosomatic well-being, we also combine them to examine overall well-being.

Longitudinal Effects of Vacation on Employee Well-Being

As theorized above, vacations serve as a beneficial longer term recovery opportunity to improve employee well-being as they allow for the long-term cessation of work demands (ERM) and enhanced resource restoration (COR). More specifically, there are various opportunities to engage in activities and experiences during vacation that build and restore resources by allowing people to engage in their preferred leisure activities (e.g., hobbies, family activities, relaxing activities). Like other short-term recovery settings, vacations provide an opportunity to have the four core recovery experiences: psychological detachment (mentally disconnecting from work during nonwork time), relaxation (experiencing low psychological and physiological arousal), mastery (engaging in challenging activities that promote learning and growth), and control (having control to decide what one does during nonwork time; Sonnentag & Fritz, 2007). Recovery experiences are also theorized to restore and build resources (Sonnentag & Fritz, 2007; Steed et al., 2021) and have been found to increase health and well-being during a vacation and after (de Bloom et al., 2013; de Bloom, Geurts, & Kompier, 2011). By repeatedly restoring and building resources through preferred activities and recovery experiences, while not being exposed to depleting work demands, vacations improve employee well-being. Thus, we predict:

> *Hypothesis 1*: Well-being levels increase from before a vacation to during a vacation away from work (vacation effect).

Further, the positive effects of a vacation on employee well-being should also be evident in the after effect (comparison of well-being levels from before vacation to the first measurement after returning from vacation), although to a smaller extent than the vacation effect. The processes noted above with the vacation effect should still occur, building resources and reducing load, but as one returns from a vacation and resumes work, job demands are reintroduced, and an individual must invest energy and effort to complete work tasks (Brosch et al., 2024; Sonnentag & Niessen, 2008). From an ERM lens, load reactions resulting from expending effort to meet work demands will start to decrease the well-being gains from the vacation (Meijman & Mulder, 1998). Similarly, from a COR perspective, the reintroduction of work demands will begin to deplete the resources built up during vacation. Thus, theoretically, there should also be a decrease in well-being from measurement during vacation to the first measurement after vacation (return effect). However, these well-being levels will still likely remain higher than they were before the vacation due to the resources and subsequent well-being benefits gained during vacation. Indeed, previous meta-analytic work (de Bloom et al., 2009) found evidence that supported this trend for the after effect. As such, we propose the following hypotheses:

> *Hypothesis 2*: Well-being levels decrease from during a vacation to the first measurement after vacation (return effect).

> *Hypothesis 3*: Well-being levels are higher upon the first measurement after vacation than they were before the vacation (after effect).

While theory and previous empirical results suggest that vacations should improve employee well-being, these improvements in well-being may be temporary and fade out quickly. Previous meta-analytic work (de Bloom et al., 2009) found that the fade-out effect was similar in magnitude (but opposite in direction) to the after effect. This suggests that the benefits gained by the vacation are essentially erased when measured at a later point. Note that the timing of the later point varies across studies, but the average study follow-up timing was 19 days across the four primary studies in de Bloom et al.'s study. The presence of the fade-out effect is consistent with both an ERM and COR lens. As an individual returns to work after vacation, their psychological and psychosomatic well-being that increased during vacation are likely to decrease as work demands and stressors become present again. As one continues to be exposed to work demands after vacation, the resources accrued during vacation will continue to be depleted back toward prevacation levels. Based on this theoretical reasoning and empirical evidence, we propose:

> *Hypothesis 4*: Well-being decreases from the first measurement after vacation to the final measurement reported from a study (fade-out effect).

[1] Note that theoretically, vacations should impact physiological well-being (e.g., heart-rate variability, cortisol levels, blood pressure) as well. We coded for these outcomes when conducting our meta-analysis but were ultimately unable to include physiological well-being due to too few primary studies.

Moderators

It is also important to understand variables that influence the size of vacation–well-being relationships, as moderators remain untested meta-analytically to date and provide important information to consider when interpreting results and making practical recommendations. We consider four moderators in the present study: vacation location, vacation length, the national cultural value of performance orientation (PO), and nationally mandated vacation days.

Vacation Location

With regard to the location of a vacation, taking a trip away from home may be more beneficial for well-being than being at home in a "staycation." This benefit arises from being mentally distanced from one's daily work routines and obligations (Lehto, 2013). Empirical evidence suggests that individuals away from home are also less likely to engage in work activities and ruminate about work as compared with when they are home during a weekend before the vacation (de Bloom et al., 2017). This refraining from work activities and thoughts results in one deactivating their psychophysiological systems used by work (Meijman & Mulder, 1998), halting resource depletion, and allowing for more extensive recovery of resources to occur, improving well-being. However, a vacation away from home may result in larger effect sizes for return and fade-out effects (i.e., a quicker decrease in well-being) as it is often difficult for employees to transition back to work after vacation right away (Sousa & Gonçalves, 2021), which may impair well-being and tax more of their resources. On the other hand, those spending vacation at home may not experience as large of return and fade-out effects as they have maintained some semblance of their normal routines while at home. Thus, we hypothesize:

> *Hypothesis 5*: Compared with vacations spent at home, vacations spent away from home result in larger well-being benefits in terms of stronger (a) vacation effects and (b) after effects but also will see those benefits fade out quicker, as represented by stronger (c) return and (d) fade-out effects.

Vacation Length

Drawing on the ERM and COR, we propose that the magnitude of changes in well-being due to a vacation is dependent upon the length of a vacation. Longer vacations by definition mean that a person has a longer time without exposure to work demands. In turn, this means that psychophysiological systems are not being activated for an extended period, resulting in improved well-being benefits (Horan et al., 2021). For the COR mechanism, the longer a vacation, the more time one has to accumulate resources and allow for a resource gain cycle to occur. According to COR theory, there is a positive, exponential growth trend over time in resource accumulation (Halbesleben et al., 2014; Hobfoll, 1988). This suggests that more time spent restoring resources on a longer vacation should result in larger well-being benefits.

However, the impact of vacation length on return and fade-out effects is less clear. On one hand, from both the ERM and COR recovery perspectives, a longer vacation may be more beneficial (i.e., weaker return and fade-out effects), as individuals have increased well-being and more resources at their disposal to contend with work demands upon returning to work. On the other hand, a longer vacation may result in stronger fade-out effects as one's workload has more time to accumulate, creating additional demands and thus more activation of psychophysiological systems and increased resource depletion, compared with a shorter vacation. In line with this, empirical evidence suggests that a higher workload upon returning from vacation is associated with larger well-being decreases after returning to work (Kühnel & Sonnentag, 2011; Syrek et al., 2018). Given these competing perspectives, it is difficult to make specific predictions. Thus, we propose the following competing hypotheses:

> *Competing Hypothesis 6a:* Longer vacations result in larger well-being benefits than shorter vacations that do not fade out as quickly, as represented in stronger (a) vacation and (b) after effects and weaker (c) return and (d) fade-out effects.

> *Competing Hypothesis 6b:* Longer vacations result in larger well-being benefits than shorter vacations as represented in stronger (a) vacation and (b) after effects, but also see these benefits fade out quicker, as represented in stronger (c) return and (d) fade-out effects.

National Context

The national and cultural contexts in which an individual resides may also have important implications for how a vacation impacts employee well-being. One cultural value that may be particularly important is performance orientation, which represents "the extent to which a community encourages and rewards innovation, high standards, and performance improvement" (House et al., 2004, p. 239). People in countries higher on performance orientation value personal achievement and improvement, while those in countries lower on performance orientation value quality of life, societal/family relationships, and belongingness. As such, individuals from cultures that are higher on performance orientation may be expected to spend more time expending effort and personal resources toward work tasks and have less overall recovery time available. In turn, this combination of investing high levels of effort and energetic resources toward work over time paired with less time spent recovering resources may result in individuals from high-performance orientation cultures having higher psychophysiological activation and depleted resources available over time (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998). In COR terms, they are more likely to be in a loss cycle, whereby resources lost due to high work and personal demands lead to even further resource loss over time (Halbesleben et al., 2014). In turn, they have a higher need for a longer term recovery through vacation and would experience larger well-being benefits from vacation.

For the return and fade-out effects, individuals from cultures higher on performance orientation should see weaker return and fade-out effects. Given individuals in such cultures more highly value work achievement, the return to work may be seen as a positive experience rather than a threat to their well-being. Viewing the return to work this way may result in less resource depletion and may actually build resources. Indirectly supporting this, Brosch et al. (2024) found that employees higher on work engagement and who viewed their jobs positively had weaker vacation fade-out effects than those lower on engagement. Qualitative work also suggests that employees who enjoy and value their jobs experience positive emotions when returning from vacation to work (Sousa & Gonçalves, 2021). Thus, we hypothesize the following:

> *Hypothesis 7*: The relationship between vacation and well-being will be stronger in countries higher on performance orientation, as represented by a stronger (a) vacation effect and (b) after effect, along with weaker (c) return effects and (d) fade-out effects.

Along with the national culture, a country's legislation may also play an important moderating role. Countries differ in the number of vacation and paid holidays that are federally mandated. For example, Spain has 39 mandated vacation and paid holidays, while the United States has zero (Center for Economic Policy Research, 2019). Not only can national legislation restrict the length of a vacation, but it can also change a person's experience of the vacation itself. When vacation days are scarce, they may be seen as more valuable, heightening the well-being benefits of vacation. Supporting this, a large body of research across many disciplines including psychology, marketing, and economics has long recognized that when a resource (e.g., vacation days) is seen as scarce, its perceived value increases (Aggarwal et al., 2011; Brock & Mazzocco, 2004; Cialdini, 1993; Lynn, 1992). In turn, this increased value can lead to higher mental engagement in the vacation, ensuring better detachment from work, and can amplify the resources gained from these experiences and activities, leading to well-being increases (Geschwind et al., 2011; Shah et al., 2012). Further, when time and other resources are seen as limited, this results in a greater likelihood of savoring and fully attending to positive experiences, which also increases well-being (Kurtz, 2008).

Fewer nationally mandated vacation days might intensify return and fade-out effects. According to work–life ideology theory (Leslie et al., 2019), cultures emphasizing productivity and material wealth foster a work priority ideology, valuing work over leisure. The lack of nationally mandated vacation days may reflect a country's value for work over leisure. Consequently, individuals from these cultures may experience greater pressure to perform and face higher demands upon returning from vacation, leading to a faster decline in vacation-related well-being benefits. They may also be less likely to engage in recovery after vacation to compensate for lost work time, which further harms well-being. Thus, we hypothesize that:

> *Hypothesis 8*: The relationship between vacation and well-being will be stronger in studies conducted in countries with fewer versus more nationally mandated vacation days, as represented by stronger (a) vacation effects and (b) after effects, but they will also see these benefits fade out quicker with stronger (c) return and (d) fade-out effects.

Activities and Experiences During Vacation

The contents of the vacation itself in terms of the psychological experiences it induces and the type of activities a person engages in are likely to be meaningful factors. In terms of psychological experiences, we focus on recovery experiences (psychological detachment, relaxation, mastery, and control) given their aforementioned role in recovery processes in general. Indeed, multiple meta-analyses have linked these recovery experiences generally (not limited to the vacation context) to well-being outcomes (Bennett et al., 2018; Headrick et al., 2022; Steed et al., 2021). Theoretically, these effects are due to both the deactivation of psychophysiological systems and the restoration of resources (Headrick et al., 2022) as predicted by ERM and COR. Consistent with this and the logic presented above for the general benefits of vacations acting through recovery experiences, we expect a positive relationship between the extent of these recovery experiences and well-being during and directly following a vacation.

> *Hypothesis 9*: The amount of psychological detachment, relaxation, mastery, and control experienced during a vacation is positively correlated with well-being (a) during and (b) at the first measurement after vacation.

In terms of vacation activities, previous research has examined how broad categories of activities like physical (e.g., hiking), social (e.g., time spent with one's partner or friends), and passive (e.g., relaxing at the beach) relate to well-being both during and after the vacation (de Bloom et al., 2013; de Bloom, Geurts, & Kompier, 2011; de Bloom, Geurts, Sonnentag, et al., 2011; Lounsbury & Hoopes, 1986; Nawijn, 2010, 2011). A few of these studies compared the effect size between different types of activities and well-being (de Bloom et al., 2013; de Bloom, Geurts, & Kompier, 2011; de Bloom, Geurts, Sonnentag, et al., 2011; Nawijn, 2010), but results were quite mixed (de Bloom et al., 2013; de Bloom, Geurts, & Kompier, 2011; de Bloom, Geurts, Sonnentag, et al., 2011; Nawijn, 2010), which could be due to examining different types of activities and different groupings.

Despite these mixed findings, we posit that there is theoretical reason to suspect that physical activities may be more beneficial than social and passive activities. Profile research examining recovery activities in conjunction found that profiles consisting of more physical and social activities had higher levels of psychological detachment, relaxation, mastery, and control (de Bloom et al., 2018) compared with those who engaged in less social and physical activities. However, physical activities have an additional benefit over social activities in that they more strongly activate physiological mechanisms of recovery. Specifically, physical activity relaxes muscle tension and reduces release of the stress hormone cortisol (Krajewski et al., 2011). It also increases the release of norepinephrine, serotonin, and dopamine in the brain, which all promote feelings of happiness (Mathew & Paulose, 2011). These activities can also increase circulation and body temperature, which can improve mood and have an antidepressant effect (Koltyn, 1997). Overall, these physiological mechanisms bolster both the ERM and COR recovery mechanisms through which physical activities improve well-being. Moreover, when comparing social activities with passive activities, social activities may be more beneficial as they provide opportunities for both mechanisms (i.e., the ERM reduced activation of psychophysiological systems and COR restoration of resources) of recovery, while the main benefit of more passive activities is the reduced activation of psychophysiological systems.

> *Hypothesis 10*: Engaging in physical activities during vacation will have the largest positive correlation with well-being (a) during and (b) after vacation, social activities will have the

second strongest effect, and passive activities will have the weakest effect.

Method

Transparency and Openness

The literature search, inclusion criteria, coding scheme, and meta-analytic procedures, are reported in the main text. We adhered to the *Journal of Applied Psychology* methodological reporting checklist. This study's design and its analysis were not preregistered. The meta-analytic data set and code are publicly available on the Open Science Framework at https://osf.io/w6khg/?view_only=ff0eab5990004054bdcb6aa9191d9f83. We used R (Version 6.1; R Core Team, 2023) and the package *ggplot2* (Wickham, 2016); other specific packages used are noted below. Institutional review board approval was not required as this study was a meta-analysis of previous studies and we did not collect any primary data.

Literature Search

To identify studies for possible inclusion, an extensive literature search using APA PsycInfo, Web of Science, and ProQuest Dissertations and Theses Global databases was conducted. Keywords included "vacation," "holiday," "well-being," "health," "life satisfaction," "burnout," "recovery," "sleep," "affect," "performance," and "fatigue." In addition to the articles we found in the database search, we performed a forward citation search of de Bloom et al.'s (2009) study and searched the reference section of five key articles (Chen & Petrick, 2013; de Bloom et al., 2022; Horan et al., 2021; Uysal et al., 2016; Yan et al., 2023). Efforts were also made to collect unpublished research by soliciting data via email on a listserv for occupational health psychology researchers. We also searched relevant conference programs from 2010 to 2024 from the Society for Industrial and Organizational Psychology, the Academy of Management Proceedings, and the European Association of Work and Organizational Psychology. Results yielded 1,817 studies for possible inclusion in the meta-analysis.

Inclusion Criteria

Studies were determined to be eligible if they (a) reported an effect size between at least two time points before, during, and/or after a vacation that was convertible to a repeated measures standardized mean difference (SMD; d_{av}), or the necessary information to calculate d_{av}, (b) were written in English, (c) a majority (i.e., at least 51%) of the sample being healthy, working adults (not college students, retirees, adolescents, etc.),[2] and (e) reported at least one measure of overall composite, psychological, or psychosomatic well-being.

We coded for three types of well-being indicators: psychological well-being, psychosomatic well-being, and overall composite measures of well-being. To represent psychological well-being, we included key well-being outcomes commonly reported in the recovery literature: mental well-being indicators (i.e., burnout, anxiety, depression, emotional exhaustion, strain, fatigue, stress, vigor, engagement, need for recovery), the presence of positive mental well-being indicators (i.e., life satisfaction, family satisfaction, leisure time satisfaction, feeling recovered, social life satisfaction), and affective states (i.e., positive affect, negative affect, affective well-being, calm, positive and negative affective experiences, negative affective activation, affect balance, resilience, happiness; Steed et al., 2021). We also coded for psychosomatic well-being indicators (i.e., headaches, sleep, physical fatigue, health complaints, somatic complaints, sleep quantity), which are physical and somatic symptoms that develop as a result of psychological stress (Bransfield & Friedman, 2019). We coded for overall composites of health and well-being (i.e., overall well-being, general health, health and well-being) as some studies provided information for overall measures of well-being as opposed to specific facets (e.g., affective well-being only).

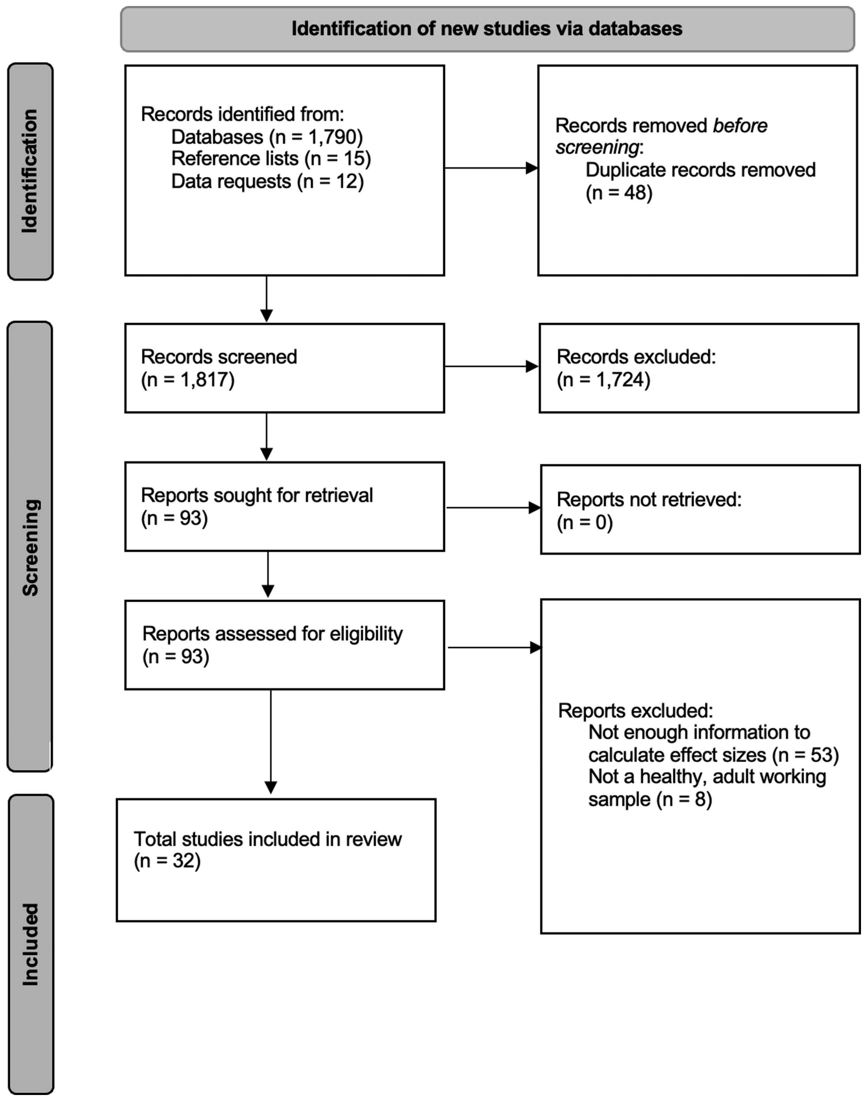
For the examination of correlations of activities and experiences during and after vacation, we used the same scheme described above to code well-being outcomes. We coded recovery experiences using the four recovery experiences from Sonnentag and Fritz's (2007; i.e., psychological detachment, relaxation, mastery, and control) study. For activities during vacation, we coded for continuous measures of physical (i.e., time spent on physical activities each day, percentage of time spent on physical activities, percentage of days on vacation doing physical activities), social (i.e., time spent on social activities each day, percentage of time spent on social activities, time spent conversing with partner, time spent with partner), and passive activities (i.e., time spent on passive activities each day, percentage of time spent on passive activities) based on previous conceptualizations in the vacation literature of the categories of activities one engages in during vacation (de Bloom, Geurts, & Kompier, 2011). To determine inclusion, each article was reviewed by the lead author. After reviewing the 1,817 identified studies, 32 studies (30 published, two dissertations/theses; see Figure 1) with 256 effect sizes were used in the meta-analyses examining mean differences (Hypotheses 1–8). Eight studies with 69 effect sizes were used in the meta-analyses examining correlations (Hypotheses 9 and 10).

Coding Procedures and Scheme

Coding was completed by the first and second authors of the study. For the included articles, we coded the country of origin that was then used to impute performance orientation values from the Global Leadership and Organizational Behavior Effectiveness Project, which were coded as performance orientation values scores (which represent the extent to which individuals believe that innovation, high standards, and performance improvement should be prioritized and rewarded, i.e., "should be" scores) and performance orientation practices scores (which represent the actual behaviors and practices prevalent in that country that reward innovation, high standards, and performance improvement, i.e., "as is" scores; House et al., 2004) for studies with participants from a single country. We also coded for vacation location (fully away from home, fully at home, or a mix of participants taking vacation away from and at home), percentage of sample that were working adults, well-being means, standard deviations, comparison type (i.e., before vacation vs. during vacation, during vacation vs. first measurement after vacation, before vacation vs. first measurement after vacation, first measurement after vacation vs. last measurement after vacation), and reliabilities for well-being measures. To ensure the accuracy of coding, the first and second authors coded a random sample of nine studies and the 58 effect sizes within these studies. Among all possible data points coded by

[2] All included studies consisted of 100% working samples except for one study, which had a 68% working sample.

Figure 1
Flow Diagram of Study Retrieval and Selection Procedures



both authors, there were discrepancies in coding between the authors in only 3.5% of cases. Discrepancies were resolved through discussion and reexamination of the primary studies.

Meta-Analytic Procedures

Accounting for Nonindependence via the RVE Method

Given that the focus of the study was on longitudinal within-person effects of vacation measured at multiple time points, the effect sizes included in the meta-analysis were from the same sample (i.e., the same sample of people was measured at each time point in each study). Additionally, many studies reported multiple outcomes of both psychological (e.g., life satisfaction and stress) and psychosomatic well-being (e.g., sleep quality and headaches). Both factors indicate that the 256 effect sizes included in our meta-analysis were not fully independent. To account for the dependent structure of effect sizes within studies and use all the available effect sizes without biasing estimation, we applied the RVE technique originally proposed by Hedges et al. (2010) and expanded upon by Pustejovsky and Tipton (2022). Specifically, we used the correlated and hierarchical effects working model (Pustejovsky & Tipton, 2022), which accounts for both the correlated and hierarchical structures of our effect size estimate. Pustejovsky and Tipton (2022) noted the following: “Combining these features into one working model may be particularly attractive in meta-analyses that includes studies with a broad variety of outcomes, follow-up times, or other operational variations—exactly the circumstances where meta-regression and RVE methods are most useful” (p. 5). The correlated and hierarchical effects working model best represents the type of dependency among effect sizes in the data in our meta-analysis given that the studies included in our meta-analyses provide multiple effect sizes for psychological, psychosomatic, and overall well-being. The correlated and hierarchical effects model also assumes that there is one, known correlation (ρ) between two effect sizes that come from within the same study (Pustejovsky & Tipton, 2022). We specified this constant sampling correlation as $\rho = 0.6$ for all of our analyses,[3] which is recommended by Pustejovsky and Tipton (2022) when there is limited information about correlations among effect sizes. All analyses were conducted in R using the clubSandwich and metafor packages (Pustejovsky, 2023; Viechtbauer, 2010).

Calculation of Effect Sizes

Initially, Cohen's d_{av} was calculated, which is calculated by estimating the mean difference within subjects between measurement occasions (e.g., before and after vacation) and then standardizing the mean difference based on the average standard deviation[4] (Cumming, 2012; Cumming & Calin-Jageman, 2016; Lakens, 2013):

$$d_{av} = \frac{M_{diff}}{\sqrt{\left(\frac{SD_1^2 + SD_2^2}{2}\right)}}. \quad (1)$$

Furthermore, while appropriate for sample estimates, Cohen's d_{av} can be positively biased for population estimates (Cumming, 2012). Thus, we corrected Cohen's d_{av} by calculating Hedges's g_{av} using the following equation:

$$\text{Hedges's } g_{av} = d_{av} \times \left(1 - \left(\frac{3}{4 \times n - 1} - 1\right)\right). \quad (2)$$

Estimation Procedures and Corrections

For all main effects, we report the number of studies (k_s) and the number of effect sizes (k_e). To compute the meta-analytic estimate of the SMDs at each comparison point weighted for sampling error (g_{av}), we fit an intercept-only meta-regression. We then computed the meta-analytic SMD corrected for both sampling and measurement error representing the true population estimate (δ). To correct for unreliability in measurement, we individually corrected each effect size based on the reliability estimate provided by each study. For studies that were missing reliability information, we imputed the average reliability estimate from the studies included in our meta-analysis (Morris, 2023). We chose to individually correct effect sizes rather than use an artifact distribution approach, as individual corrections allow for the estimation more accurate standard error and calculate confidence interval estimates around the overall corrected meta-analytic effect, which is the main benefit of using RVE. To ease the interpretation of the meta-analytic effect size estimates for the mean differences over time (δ), we also provide the correlation (r) of the overall meta-analytic effect size estimates converted from the corrected SMD. We calculated a 95% confidence interval (CI) around the corrected point estimate to assess statistical significance, along with the standard error of the corrected meta-analytic estimate (SE_δ). We examine the variability of effect sizes based on I^2, which represents the percentage of variability in effect size estimates not due to sampling error. Further, we divide the I^2 estimate into the percentage of variability due to between-study heterogeneity ($\sigma^2_{between}$) and the percentage due to within-study heterogeneity (σ^2_{within}).

For meta-analytic estimation of the correlations between vacation experiences and activities with well-being during and after vacation (i.e., Hypotheses 9 and 10), we report the number of studies (k_s), number of effect sizes (k_e), meta-analytic correlation weighted for sampling error (r), and the meta-analytic correlation between vacation experiences and activities with well-being during and after vacation corrected for both sampling and measurement error (ρ) using the same procedure described above. We report the 95% CI around the corrected meta-analytic correlation (95% CI_ρ) along with its corresponding standard error (SE_ρ). We also provide the standard deviation around the corrected meta-analytic correlation (SD_ρ).

Tests of Moderators

To test categorical moderators (Hypothesis 5), we used RVE metaregression with the subgroup correlated effect (SCE) model specified. The SCE model is useful because it allows one to include all levels of a categorical moderator (e.g., a vacation away from home or a mixed home and away vacation) in the same metaregression model rather than running two separate metaregressions for each subgroup. This avoids issues from subgroup analyses, like reduced sample size, which lowers the statistical power of the metaregression (Pustejovsky & Tipton, 2022). Additionally, the interpretation of the results of metaregression using the SCE model is conceptually the same as splitting the categorical moderator into two subgroups and running two separate analyses. To determine if the two subgroups' effect sizes were statistically different from one another, we interpreted the statistical significance of the Q statistic. To test continuous moderators, we used RVE metaregression, where the level of the moderator is entered as a predictor of the effect size.

Tests of Publication Bias

To examine the possibility of publication bias, we conducted fail-safe N tests. We also conducted nonparametric trim-and-fill analyses (Duval & Tweedie, 2000), but previous work has noted that analyses

[3] Sensitivity analyses were performed by repeating the analyses with varying the value of ρ (between $\rho = .1$ and $\rho = .9$). The results of these analyses did not change the interpretations for any of the analyses.

[4] It is important to note that a within-person effect size like Cohen's d_{rm} (Lakens, 2013; Morris & DeShon, 2002), which takes into account the correlation between well-being outcomes at the different time points, could not be used as most of the studies did not report this correlation. One work around for this is to estimate the correlation between vacation and well-being outcomes at different time points using t and f statistics of the effect of interest provided in primary studies. Another method is to estimate the correlation to be used in the calculating of d_{rm} using the average correlation across the included studies in the meta-analysis that do provide this value. However, very few studies reported these correlations, rendering us unable to calculate an average correlation that could be applied to all studies included in this meta-analysis. Unless the original raw data can be obtained, or there are enough related studies providing correlations in a literature, then d_{rm} cannot be calculated uniformly across studies, which was the case for our study. Cumming (2012) and Lakens (2013) described that the ideal solution to this problem is calculating Cohen's d_{av}. Additionally, Lakens (2013) noted that d_{rm} can be unreasonably conservative and that Cohen's d_{av} is more similar to a classical Cohen's d in a between-person design. This makes Cohen's d_{av} easier to interpret and compare with other meta-analytic results in the literature.

with a k close to 10 should be interpreted with caution (Harrison et al., 2017; Sterne et al., 2011), which was the case with some of our main effects. These results for the fail-safe N tests and trim-and-fill analyses are reported in the additional online material available on the Open Science Framework (https://osf.io/w6khg/?view_only=ff0eab5990004054bdcb6aa9191d9f83). For the fail-safe N analyses, we used both the classic fail-safe N and Orwin's fail-safe N. Classic fail-safe N estimates the number of past or future studies with null findings that would be needed to reduce the meta-analytic effect size estimate to $p > .05$. In line with the American Psychological Association Meta-Analysis Reporting Standards and recent recommendations (e.g., Greco et al., 2019; Kepes et al., 2013), we also conducted Orwin's fail-safe N. Orwin's test provides a more conservative estimate of publication bias and removes relying on significance testing. Instead, Orwin's test indicates how many studies finding no effect ($\delta = 0$) it would take to reduce the observed effect size magnitude to below a predetermined value. We used a mean difference of Cohen's $d = .20$ representing a small effect as our target value. Overall, the classic fail-safe N indicates that in some cases it would take between 320 and 69,196 studies to make results nonsignificant, depending on the particular effect. Orwin's fail-safe N indicated that it would typically take at least about double or more missing zero mean difference studies to lower the meta-analytic mean difference to less than .20 for all effects except for the fade-out effect, which was already below .20. Taken together, these tests indicate that publication bias is unlikely to affect our results.

Results

Sample Characteristics

A total of 32 studies with 256 effect sizes were analyzed for the SMD hypotheses, and eight studies with 69 effect sizes were analyzed for the correlation hypotheses. Across studies, the average length of vacation was around 12 days ($M = 12.06$, $SD = 7.03$). The average length of the measurement period from the first prevacation to the last postvacation point (fade-out period) was around 21 days ($M = 20.86$, $SD = 11.47$). Ninety-four percent of studies included samples from a single country and thus could be included in the performance orientation and nationally mandated vacation days moderator analyses. Nine countries were represented, including Finland (1), Germany (4), Netherlands (7), Israel (6), Japan (2), the United States (4), the United Kingdom (4), Switzerland (1), and Canada (1). All studies that reported participant occupation included people from a mix of various occupations.

Main Effects

The meta-analytic results for the relationship between vacation and employee well-being are summarized in Table 1. The results from de Bloom et al.'s (2009) meta-analysis are also reported in the "de Bloom d" column for ease of comparison. Positive (negative) values represent an increase (decrease) in well-being between time points. Hypothesis 1 stated that there is a vacation effect, with well-being improving when comparing before the vacation with during vacation. This was supported: $\delta = .83$; 95% CI [0.69, 0.96]. According to Cohen's (1988) effect size benchmark, this would be considered a large improvement in well-being. Similarly, using Paterson et al.'s (2016) benchmarks,[5] this effect size is larger than 85% of reported effect sizes in organizational science studies. Hypothesis 2 stated that there is a return effect and that well-being levels decrease from during the vacation to the first measurement after vacation; it was supported: ($\delta = -.52$; 95% CI [−0.69, −0.35]). This is considered a medium effect by Cohen (1988) and larger than 60% of reported studies by Paterson et al. (2016). Supporting Hypothesis 3, the vacation after effect also indicated that well-being increased from before vacation to the first measurement after vacation ($\delta = .31$; 95% CI [0.22, 0.40]). This is considered a small effect by Cohen (1988) and larger than 35% of reported studies by Paterson et al. (2016). When examining the fade-out effect, well-being decreased from the first measurement after vacation to the final well-being measurement ($\delta = -.15$; 95% CI [−0.26, −0.04]), supporting Hypothesis 4. The magnitude of the fade-out effect is considered a small effect by Cohen (1988) and larger than only 15% of reported studies by Paterson et al. (2016). There was also significant heterogeneity in all effect sizes.

To help convey the meta-analytic results in a more interpretable way, we provide an illustrative example where we reexpress the meta-analytic mean difference scores to the original unit of measurement using one of the included primary studies (Brosch et al., 2024). Our corrected meta-analytic mean differences scores are expressed in terms of standard deviation units to allow this effect size to be compared across studies (Gallardo-Gómez et al., 2024). To reexpress these changes in well-being on Brosch et al.'s (2024) original unit of measurement, we used the procedure recommended by Gallardo-Gómez et al. (2024) and multiplied the meta-analytic δ value by the sample standard deviation. Brosch et al. measured well-being on a 5-point scale, and their sample had a mean well-being level of 2.93 before vacation and a standard deviation of .91. For example, the meta-analytic vacation effect in our study was an increase of $\delta = .83$. Reexpressed on a 5-point scale, this represents an increase of .76 in terms of an individual's well-being level.

Reexpressed to Brosch et al.'s 5-point scale, Figure 2 shows how well-being changes over the entire time course of a vacation. As shown in the figure, well-being levels exhibit a large increase from before to during vacation. Well-being then decreases a moderate amount when one returns to work after vacation. The fade-out period (i.e., the first measurement of well-being after vacation to the last measurement of well-being) shows that well-being continues to decrease after vacation at a slower rate. However, well-being at the final measurement point is still above the prevacation well-being level (the dashed line in Figure 2). Thus, our meta-analytic results suggest that even at the final measurement point across the studies (average time was 20.86 days postvacation) included in our meta-analysis, well-being still has not decreased back to the prevacation level.

Well-Being Subgroup Analyses

To examine more specific effects of vacation on employee well-being, subgroup meta-analyses were conducted using the SCE model (Pustejovsky & Tipton, 2022) that parsed well-being constructs into either psychological or psychosomatic well-being indicators.

[5] Comparisons to the percentiles of Paterson et al. (2016) are based off conversions of the corrected meta-analytic mean difference estimate converted to a correlation. This is based off the interpretation of Cohen's d_{av} being highly similar to a classical Cohen's d (Lakens, 2013). However, these are not a perfect 1:1 ratio effect size conversions and are only presented here to contextualize the size of vacation's meta-analytic relationship with well-being and help aid in interpretation.

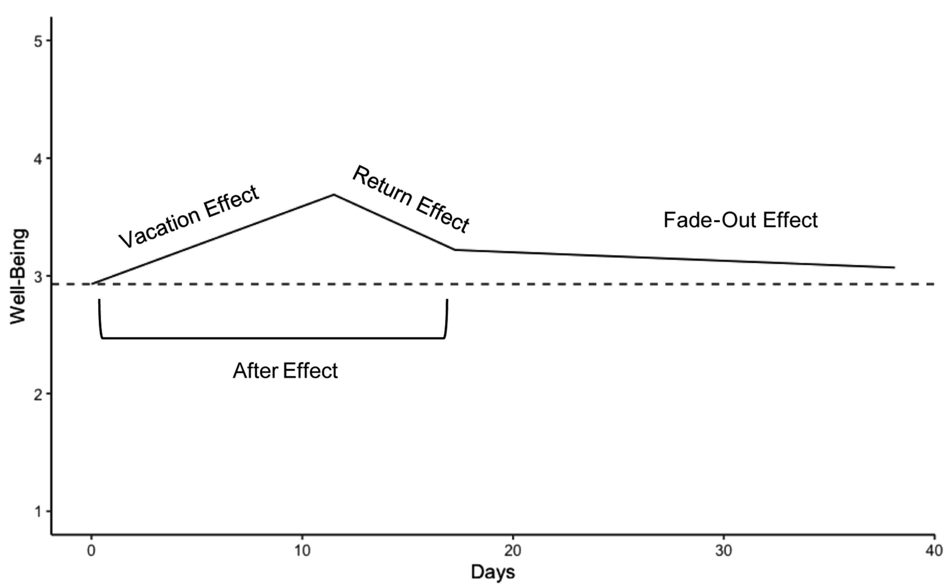
Table 1
Meta-Analytic Effects of Vacation on Well-Being Over Time

Comparison	N	k_s	k_e	g_{av}	δ	de Bloom d	r	$SE_δ$	95% $CI_δ$	I^2	$σ^2_{between}$	$σ^2_{within}$
Vacation effect (pre to during)												
Overall well-being	1,188	14	72	.77	.83*	N/A	.38	.07	[0.69, 0.96]	82%	14%	68%
Psychological	863	10	64	.73	.78*	N/A	.36	.10	[0.56, 1.00]			
Psychosomatic						N/A						
Return effect (during to after)												
Overall well-being	1,057	12	32	−.48	−.52*	N/A	−.25	.07	[−0.69, −0.35]	84%	0%	84%
Psychological						N/A						
Psychosomatic						N/A						
After effect (before to after)												
Overall well-being	3,217	29	110	.29	.31*	.43	.15	.04	[0.22, 0.40]	77%	23%	54%
Psychological	2,474	23	97	.31	.33*	N/A	.16	.05	[0.23, 0.44]			
Psychosomatic	358	4	6	.06	.06	N/A	.03	.14	[−0.37, 0.49]			
Fade-out effect (after to final measurement)												
Overall well-being	2,026	18	42	−.15	−.15*	−.38	−.08	.05	[−0.26, −0.04]	73%	23%	50%
Psychological	1,568	14	36	−.16	−.17*	N/A	−.09	.06	[−0.29, −0.03]			
Psychosomatic						N/A						

Note. I^2, $σ^2_{between}$, and $σ^2_{within}$ are not calculatable for subgroup correlated effect model subgroup analyses. N = total sample size; k_s = number of studies; k_e = number of dependent effect sizes; δ = estimated true-score SMD, corrected for measurement error; r = meta-analytic correlation converted from δ to ease interpretation; $SE_δ$ = standard error; CI = confidence interval around the SMD corrected for unreliability; I^2 = percentage of total variation in study estimates that is due to heterogeneity; $σ^2_{between}$ = percentage of variance due to between-study heterogeneity; $σ^2_{within}$ = percentage of variance due to within-study heterogeneity; N/A = not available; SMD = standardized mean difference.
* $p < .05$.

These results are presented in Table 1. In general, most studies reported effects of psychological well-being, while few reported psychosomatic indicators. Similar to the main effects, for psychological well-being, well-being improved during the vacation (δ = .78; 95% CI [0.56, 1.00]). The return effect could not be tested as there were not enough studies that reported effect sizes for psychosomatic well-being outcomes. There was also evidence of an after effect for psychological well-being (δ = .33; 95% CI [0.23, 0.44]), but there was not a significant after effect for psychosomatic well-being (δ = .06; 95% CI [−0.37, 0.49]). Finally, there was a significant fade-out effect for psychological well-being similar to the overall fade-out effect (δ = −.17; 95% CI [−0.29, −0.03]).

Figure 2
Illustrative Example of Meta-Analytic Well-Being Changes Due to Vacation Reexpressed on a 5-Point Scale



Note. The solid line represents changes in well-being before, during, and after vacation. The dashed horizontal line represents the well-being level before vacation. The days represented by each time point were chosen based on the average number of days between time points across studies.

There were not enough studies that reported psychosomatic well-being outcomes to test the fade-out effect.

Moderating Effects

Vacation Location

Hypothesis 5 stated that vacations spent primarily away from home have stronger (a) vacation effects and (b) after effects, along with stronger (c) return and (d) fade-out effects compared with vacations spent at home. No studies included only participants with vacations primarily spent at home, so we were only able to compare samples where all participants spent their vacation entirely away with samples that had a mix of some participants who vacationed at home and some participants who vacationed away from home. As shown in Table 2, for the vacation effect, subgroup analyses indicated that the effect of vacation on well-being was significantly different between samples that spent vacations spent away from home (δ = .70; 95% CI [0.47, 0.92]) and samples consisting of a mix of home and away vacations (δ = .84; 95% CI [0.63, 1.06]), with mixed samples reporting a larger vacation effect, contrary to prediction. In terms of the return effect, samples who spent their vacation away from home had weaker return effects (δ = −.46; 95% CI [−0.65, −0.26]) than mixed vacation samples (δ = −.56; 95% CI [−0.85, −0.27]), again contrary to prediction. For the vacation after effect, samples who vacationed away from home had a weaker effect (δ = .25; 95% CI [0.09, 0.41]) than mixed vacation samples (δ = .35; 95% CI [0.21, 0.49]). For the fade-out effect, away-from-home samples had a weaker fade-out effect (δ = −.11; 95% CI [−0.25, 0.03]) compared with mixed samples (δ = −.22; 95% CI [−0.44, 0.01]). In sum, these results do not support Hypothesis 5.

Vacation Length

We proposed competing hypotheses regarding the moderating role of vacation length. Results of continuous moderator analyses are presented in Table 3. Metaregression results indicate that longer vacations were related to a stronger vacation effect on well-being (b = .05, p < .001). Similarly, longer vacations strengthened the vacation–well-being relationship for the after effect (b = .02, p < .01). For the return and fade-out effects, a longer vacation related to stronger well-being decreases for both the return effect (b = −.03, p < .01) and fade-out effect (b = −.01, p < .01). These results provide full support for Hypothesis 6b and refute Hypothesis 6a. This suggests that while longer vacations lead to larger well-being improvements during vacation, they also lead to steeper decreases in well-being when one returns, and these effects fade out quicker.

Performance Orientation

Hypothesis 7 predicted that the relationship between vacation and well-being would be stronger in cultures higher versus lower on performance orientation. There was a significant and positive moderating effect of performance orientation on well-being for both the vacation effect (performance orientation values b = .15, p < .001; PO practices b = .20, p < .001) and after effect (values b = .06, p < .001; practices b = .08, p < .001). Additionally, there was a significant moderating effect of performance orientation on the return effect (values b = −.09, p < .001; practices b = −.12, p < .001) and fade-out effect (values b = −.03, p < .05; practices b = −.04, p < .05). These results suggest that individuals from high-performance orientation cultures experience greater well-being benefits during vacation but face a quicker decline upon returning to work, partially supporting Hypothesis 7.

Nationally Mandated Vacation Days

Hypothesis 8 predicted that countries with fewer nationally mandated vacation days would see stronger well-being increases due to vacation but also stronger decreases after vacation. There was a significant and positive moderating effect of the number of nationally mandated vacation days on both the vacation effect (b = .03, p < .001) and after effect (b = .01, p < .001). In addition, there was a significant and negative moderating effect number of nationally mandated vacation days on both the return effect (b = −.02, p < .001) and fade-out effect (b = −.01, p < .05). These results indicate that as the number of nationally mandated vacation

Table 2
Subgroup Analyses of Meta-Analytic Effects of Vacation Location on Well-Being

Comparison	N	k_s	k_e	δ	$SE_δ$	95% $CI_δ$	$SD_δ$	Q	p
Vacation effect (before to during)									
Away from home	396	7	11	.70*	.09	[0.47, 0.92]	.15	623.10	<.001
Mixed vacation	792	7	61	.84*	.09	[0.63, 1.06]	.20		
Return effect (during to after)									
Away from home	367	6	8	−.46*	.07	[−0.65, −0.26]	.04	62.39	<.001
Mixed vacation	690	6	24	−.56*	.11	[−0.85, −0.27]	.25		
After effect (before to after)									
Away from home	1,539	17	38	.25*	.07	[0.09, 0.41]	.26	45.62	<.001
Mixed vacation	1,299	10	64	.35*	.06	[0.21, 0.49]	.15		
Fade-out effect (after to final measurement)									
Away from home	750	8	10	−.11	.06	[−0.25, 0.03]	.04	9.65	<.01
Mixed vacation	898	8	24	−.22	.10	[−0.44, 0.01]	.24		

Note. N = total sample size; k_s = number of studies; k_e = number of dependent effect sizes; δ = estimated true-score SMD, corrected for measurement error; $SE_δ$ = standard error; CI = confidence interval around SMD; $SD_δ$ = standard deviation of the true effect size; p = p significance value of regression coefficient; SMD = standardized mean difference.
* p < .05.

Table 3
Continuous Moderator Analyses for Effects of Vacation on Well-Being

Variable	k_s	k_e	*b*	*SE*	95% CI *LL*	95% CI *UL*	*p*
GLOBE PO values							
Vacation effect	12	62	.15	.01	0.12	0.17	<.001
Return effect	10	28	−.09	.01	−0.11	−0.06	<.001
After effect	28	101	.06	.01	0.04	0.07	<.001
Fade-out effect	17	39	−.03	.01	−0.05	−0.01	<.05
GLOBE PO practices							
Vacation effect	12	62	.20	.02	0.16	0.24	<.001
Return effect	10	28	−.12	.02	−0.17	−0.07	<.001
After effect	28	101	.08	.01	0.05	0.10	<.001
Fade-out effect	17	39	−.04	.01	−0.06	−0.01	<.05
Nationally mandated vacation days							
Vacation effect	12	62	.03	.01	0.02	0.04	<.001
Return effect	10	28	−.02	.01	−0.02	−0.01	<.001
After effect	28	101	.01	.01	0.01	0.01	<.001
Fade-out effect	17	39	−.01	.01	−0.01	−0.01	<.05
Vacation length							
Vacation effect	14	72	.05	.01	0.04	0.07	<.001
Return effect	12	32	−.03	.01	−0.05	−0.01	<.01
After effect	22	69	.02	.01	0.01	0.03	<.01
Fade-out effect	16	36	−.01	.01	−0.02	−0.01	<.01

Note. GLOBE = Global Leadership and Organizational Behavior Effectiveness; PO = performance orientation; CI = confidence interval around unstandardized regression coefficients; k_s = number of studies; k_e = number of dependent effect sizes; *b* = unstandardized regression coefficients; *SE* = standard error; *LL* = lower level; *UL* = upper level; *p* = *p* significance value of regression coefficient.

days increase, so too does the increases in well-being from vacation. However, returning to vacation results in larger well-being decreases for those in countries with more nationally mandated vacation days.[6] Thus, Hypothesis 8 was not supported.

Experiences and Activities During Vacation

The results regarding the correlations between specific vacation activities and experiences and well-being are reported in Table 4. With regard to recovery experiences, psychological detachment (ρ = .29, 95% CI [0.02, 0.56]) was positively correlated with well-being during vacation and at the first measurement after vacation (ρ = .36, 95% CI [0.26, 0.45]). Control was only significantly correlated with well-being during (ρ = .21, 95% CI [0.02, 0.41]), but not after, vacation (ρ = .34, 95% CI [−0.03, 0.71]); relaxation showed the opposite pattern, with no significant correlation with well-being during vacation (ρ = .33, 95% CI [−0.41, 1.06]) but a positive association after vacation (ρ = .36, 95% CI [0.12, 0.59]). Mastery could only be tested with the return to work due to too few studies for during vacation and showed no significant association (ρ = .18, 95% CI [−0.44, 0.81]). Hypothesis 9 was thus partially supported.

Hypothesis 10 stated that engaging in physical activities during a vacation has the largest positive correlation with well-being (a) during and (b) after vacation, social activities have the second strongest effect, and passive activities have the weakest effect. Subgroup analyses revealed that the different types of activities during vacation were statistically different from one another (Q = 30.70, $p < .001$). Physical activities during vacation had the largest correlation with well-being (ρ = .28, 95% CI [0.08, 0.49]), followed by social activities (ρ = .20, 95% CI [0.04, 0.36]), while passive activities were not significantly correlated with well-being during vacation activities (ρ = −.02, 95% CI [−0.93, 0.88]). None of these activities were significantly correlated with well-being levels at the first measurement upon returning to work after vacation. These results provide partial support for Hypothesis 10. A table providing a summary of all hypothesis testing results in the additional online material is available on the Open Science Framework at https://osf.io/w6khg/?view_only=ff0eab5990004054bdcb6aa9191d9f83.

Discussion

The purpose of this study was to meta-analytically quantify the relationship between vacation and employee well-being. We examined vacation's effect on well-being at four different time points: before vacation versus during vacation (vacation effect), during vacation versus the first measurement after vacation (return effect), before vacation versus the first measurement after vacation (after effect), and the first measurement after vacation versus the last measurement point of the primary study (fade-out effect). Our results reveal that taking a vacation away from work results in a large improvement in well-being. These well-being benefits do decrease upon returning to work but remain higher than before the vacation.

[6] These results should be interpreted with caution, as there was range restriction in the nationally mandated vacation days moderator values. Specifically, the number of nationally mandated vacation days ranged from 21 to 36 days for the vacation effect and return effect and 0 to 36 days for the after effect and fade-out effect. Further, for the after effect and fade-out effect, the United States, which has zero nationally mandated vacation days, was the only country that had less than 19 mandated vacation days. Thus, countries with a relatively lower number of nationally mandated vacation days represented only 15% of effect sizes for the after effect and only 13% of effect sizes for the fade-out effect. These results therefore may not be representative of countries with less vacation days.

Table 4
Meta-Analytic Relationships Between Vacation Activities and Experiences and Well-Being

Comparison	N	k_s	k_e	r	ρ	SE_ρ	95% CI_ρ	SD_ρ
During vacation								
Experiences								
Psychological detachment	391	4	8	.26	.29*	.08	[0.02, 0.56]	.10
Relaxation	314	3	5	.28	.33	.17	[−0.41, 1.06]	.26
Mastery		2	2					
Control	314	3	5	.18	.21*	.04	[0.02, 0.41]	.00
Activities								
Passive	400	3	5	−.02	−.02	.21	[−0.93, 0.88]	.34
Physical	504	4	7	.24	.28*	.06	[0.08, 0.49]	.03
Social	454	4	7	.17	.20*	.04	[0.04, 0.36]	.00
First measurement after vacation								
Experiences								
Psychological detachment	532	4	6	.31	.36*	.02	[0.26, 0.45]	.00
Relaxation	676	4	6	.29	.36*	.08	[0.12, 0.59]	.10
Mastery	623	3	5	.15	.18	.15	[−0.44, 0.81]	.25
Control	455	3	3	.29	.34	.09	[−0.03, 0.71]	.14
Activities								
Passive	400	3	3	.05	.07	.11	[−0.43, 0.57]	.13
Physical	400	3	3	.07	.08	.05	[−0.20, 0.35]	.00
Social	400	3	4	.05	.06	.02	[−0.08, 0.20]	.00

Note. Mastery experiences during vacation were only reported by two studies and not included in analyses. N = total sample size; k_s = number of studies; k_e = number of dependent effect sizes; ρ = estimated true-score correlation, corrected for measurement error; CI = confidence interval around corrected correlation; SD_ρ = standard deviation of the true effect size; SE_ρ = standard error.
* $p < .05$.

Notably, our results are not entirely consistent with those of de Bloom et al. (2009). We found a slightly smaller after effect, meaning that if we only examined the prevacation measure to the first measurement point after vacation, we might assume, as de Bloom et al. did, that vacations have only a small effect. However, we argue that it is imperative to also consider the actual vacation effect (prevacation vs. during vacation), which was large and suggests that vacations do indeed positively affect well-being. Furthermore, we also found a smaller fade-out effect (about half the size) of de Bloom et al.'s, indicating that the decrease in well-being from the first to the last measurement points after a vacation (21 days on average) is not as steep and fleeting as previously thought and still remains higher than prevacation levels. In general, our results provide a more accurate estimate of the state of the literature, given the larger number of studies, comprehensive assessment of different change points, and a more appropriate meta-analytic technique. Overall, it seems that the previous conclusion of the vacation literature that effects of vacation are small and fade out rapidly (de Bloom et al., 2009; Sonnentag et al., 2022) is premature.

The second goal of the meta-analysis was to examine boundary conditions, which have not been tested yet meta-analytically. We found that the effects of vacation at various time points on well-being is moderated by the national cultural value of performance orientation, number of nationally mandated vacation days, location of vacation, and length of vacation. In terms of the content of a vacation, we found that physical activities had the strongest relationship with well-being during vacation, social activities had a moderate positive correlation, and passive activities showed no relationship. In addition, psychological detachment showed a consistent positive relationship with well-being during and after a vacation, whereas control was only related to well-being during a vacation, and relaxation was only related to well-being after the vacation. Mastery showed no significant association.

Theoretical Implications

Our results have multiple theoretical implications. First, our main effect results generally provide support for the patterns predicted by the ERM and COR. When integrated together, these theories predict that the long-term cessation of work demands can halt load effects and resource loss, allowing for a resource gain cycle to occur over the course of a vacation. It is important to note that while the observed patterns are consistent with these ideas, we were unable to directly test the actual mechanisms that the two theories incorporate. Since both the ERM and COR focus on energy depletion and restoration, and recovery is defined as a dynamic process aimed at restoring energy (Zijlstra et al., 2014), future research should directly measure how vacation impacts energetic resources. Similarly, the ERM mechanism should be explicitly tested as well by examining how physiological recovery indicators (e.g., heart-rate variability) change over time before, during, and after vacation. Furthermore, some of the boundary condition findings did not align with the predictions of ERM and COR (e.g., those who took longer vacations experienced stronger instead of weaker return and fade-out effects). This may imply the need to incorporate additional theoretical ideas to supplement the ERM and COR; this idea is discussed in detail in the Integrating Additional Theory to Interpret Moderator Effects section.

Second, our meta-analysis provides initial evidence that not all vacation activities and experiences are equally beneficial, adding to our theoretical understanding of vacation boundary conditions. Psychological detachment was the only recovery experience that positively related to well-being at the during and first measurement after vacation points. This result diverges from meta-analytic findings from nonvacation recovery (Headrick et al., 2022; Steed et al., 2021), which have suggested that all four experiences positively relate to well-being, regardless of timing. This finding suggests that extended mental disconnection from work during vacation may be the key recovery experience for improving well-being. This result aligns with the stressor-detachment model (Sonnentag & Fritz, 2015), which suggests that longer psychological detachment leads to greater recovery and well-being. While shorter breaks like a weekday evening may not fully prevent work thoughts from resurfacing, longer vacations allow for deeper, sustained detachment, leading to better recovery. This sustained disconnection likely explains why psychological detachment during vacations has such a powerful effect on well-being while other recovery experiences exhibited mixed relationships.

For recovery activities, our results suggest that physical activities have the largest well-being benefits during vacation and passive activities were not related. These results coincide with the broader recovery literature, which has generally supported the importance of physical activity for recovery (Alameer et al., 2023; Sonnentag et al., 2022). This also supports the theorization that although social activities do provide positive benefits, physical activities provide unique physiological benefits that predominately social activities (e.g., getting dinner with friends) cannot provide. Thus, it appears that physical activities during vacation are particularly restorative. Regarding passive activities, it may be that these activities are less resource providing than the other activities, and this may be exacerbated during vacation when resource-providing activities are more readily available. Because people are likely to engage in a mix of activities during vacation, one way to extend our findings would be to determine if there are unique combinations of recovery activities that are particularly beneficial. For example, it may be that passive activities do relate to well-being but only when combined also with some physical activities. Using a person-centered profile approach based on daily activities (Alameer et al., 2023) and daily well-being would be a useful method for testing this idea.

Finally, our meta-analysis helps speak to the way some researchers have defined the fade-out effect (Fritz & Sonnentag, 2006; Kühnel & Sonnentag, 2011) in terms of the amount of time it takes for well-being to return back to prevacation levels. While we were interested in the size of the effect versus the length of time in our analyses, we can extrapolate this from our findings. That is, the average length of time between measurements of the fade-out effect was 21 days, and at this point well-being still had not returned to baseline levels. We used the slope of this trend to then estimate that if well-being continued to decline linearly, the effect would fully fade out and go back to baseline levels at 43 days after vacation. That being said, other studies have found nonlinear fade-out trajectories (Flaxman et al., 2023; Horan et al., 2021), which could affect this estimate. Additionally, there was high variability between the number of measurement points and length of time between measurement points, rendering us unable to more precisely estimate the size of the fade-out effect in relation to the amount of time that has passed. In other words, our theoretical understanding of the fade-out effect is only as precise as how it is measured. To determine how long vacation well-being benefits last, more studies with multiple measurement points are needed to pinpoint when gains return to prevacation levels.

Research on return-to-work and prevacation periods is also needed. Understanding how to reduce the return effect would increase our knowledge regarding how to prolong the beneficial effects of vacation. Speculatively, possible factors that may impact the return effect include the increased workload that built up during vacation (Fritz & Sonnentag, 2006) and the company's work–life balance culture (Tan & Li, 2021). The timing of returning to work may matter as well, as having multiple days at home to get back into routines and prepare for the return to work may help. In terms of prevacation periods, research has also rarely examined how well-being changes during the weeks leading up to a vacation can determine how beneficial a vacation is.[7] For example, one's work and nonwork demands and stress may increase as one prepares for a vacation, decreasing well-being from where it would have otherwise been (Nawijn, de Bloom, & Geurts, 2013). Alternatively, there may be a positive anticipation effect on well-being, as excitement for the trip builds, increasing well-being (Hülsheger et al., 2022; Syrek et al., 2018). It is also important to consider whether vacations are planned in advance or taken when they are needed in response to increased job demands. The "reactive planning" of a vacation may have a moderating influence that impacts how well-being fluctuates before and during the trip, yet this remains untested in the literature. In total, more precise measurement of the vacation–well-being-relationship would enhance our theoretical understanding of all aspects of this relationship.

Integrating Additional Theory to Interpret Moderator Effects

While we found some support for the main tenets of the ERM and COR, our meta-analytic results revealed that some findings counter to both these theories and our hypotheses. This occurred mainly with the hypotheses concerned with boundary conditions. In what follows, we discuss these results and integrate new theoretical perspectives that may both help explain these findings and can stimulate new theoretical directions for vacation research.

Vacation location appears to influence well-being, with studies including mixed samples (i.e., some participants taking vacations at home and some going away) showing stronger well-being increases than studies that include only workers who vacation entirely away from home. Mixed samples also showed stronger well-being declines after returning and stronger fade-out effects. This was counter to expectations, as we expected stronger benefits and stronger return and fade-out effects for those taking a vacation away from home. We are cautious in placing too much weight on these findings, as there was no way to truly compare home versus away vacations, and the mixed samples introduce a good deal of heterogeneity. A cleaner test would require more primary studies to only include those who take vacations at home or to report results separately for subsamples, and we urge future researchers to do so.

Additionally, we suggest that another theory might complement ERM and COR to better understand the impact of vacation location. Specifically, boundary theory (Ashforth et al., 2000) posits that individuals create and maintain boundaries between their work and life roles. These boundaries have a time aspect (e.g., working from

[7] We attempted to empirically test this by coding for the number of days between the prevacation period and the vacation itself as a moderator for the vacation effect. Most studies included in our meta-analysis reported this information (94%), and the moderation effect was nonsignificant. This suggests that the length of time between the prevacation measurement period and during vacation did not play a role in determining well-being increases during vacation.

9 a.m. to 5 p.m.) and location aspect (e.g., work office). Boundaries have two characteristics: flexibility (the ability to address one domain while in another) and permeability (the extent to which one can be physically in one role but mentally or behaviorally in another). People vary between segmentation (stronger boundaries) and integration (weaker boundaries), with previous empirical evidence suggesting segmentation is better for well-being as it does not allow negative experiences from one role to impact the other (Reinke & Gerlach, 2022). Being physically and mentally away from home during vacation may strengthen boundaries between work and leisure, aiding psychological detachment and preventing work stress from undermining recovery (Park et al., 2011). In contrast, vacationing at home may weaken these boundaries, as work-related thoughts and activities are more accessible. Future research should use boundary theory as a lens to examine the role of vacation location.

Turning to vacation length, we found that while longer vacations result in larger well-being increases, this also coincides with a sharper well-being decline when returning to work and a quicker fade-out. While the former findings coincide with the ERM and COR, the latter stronger return and fade-out findings effect do not. We again attest that the addition of another theory—adaptation-level theory (Helson, 1964)—may be a useful supplement to help explain inconsistent results. Specifically, adaptation-level theory posits that individuals form a baseline adaptation level based on previous exposure to stimuli, which becomes their adaptation level (e.g., one's average well-being level before vacation). Future stimuli are then judged in relation to this adaptation level. When a person experiences a stimulus that is highly different from their adaptation level, this can result in a more extreme positive or negative affective response. For example, experiencing a negative stimulus that is highly distinct from a more positive adaptation level results in an even stronger negative affective reaction, as the new experience is sharply contrasted with one's previous adaptation level. Further, adaptation-level theory states that these responses to new stimuli that differ from one's adaptation level are temporary, as the new experiences eventually become the new baseline (Bowling et al., 2005).

Applied to our findings regarding vacation length as a moderator, adaptation-level theory can help explain why longer vacations result in stronger return and fade-out effects. Our results suggest that the longer one spends on vacation, the longer the time they spend in a state of high well-being. This state of high well-being becomes their new adaptation level. Once they return to work, the decline in well-being due to work stress will be stronger because of the sharp contrast between work stress and one's recent positive experiences during vacation that led to this high level of well-being. This reasoning would also apply to the fade-out effect, although to a lesser extent, as adaptation-level theory would suggest that the harsher experience of returning to work would become more gradual over time as one adapts back to the experience of work demands. This theorizing coincides with our results suggesting that the return effect was of a moderate magnitude, while the fade-out effect was weaker in magnitude.

Moreover, adaptation-level theory can also be used to explain findings regarding the moderating role of performance orientation and the number of nationally mandated vacation days. Our results suggest that individuals from countries higher on performance orientation have both larger well-being benefits due to vacation and larger return and fade-out effects. We hypothesized that those from higher performance orientation cultures would have stronger well-being benefits from vacation, as their need for vacation recovery is higher and the return to work would be perceived less negatively by them. Viewed from an adaptation-level theory lens, it may be that the contrast between vacation and returning to work is made even stronger in cultures higher on performance orientation. In these cultures, the pressure to perform and be successful is higher (House et al., 2004). When individuals return to this highly demanding work environment, this amplifies the contrast between enjoyable vacations and work stress even more. According to adaptation-level theory, this would result in an even stronger decrease in well-being upon returning to work, which is what our meta-analytic results exhibited.

A similar notion applies to our findings regarding nationally mandated vacation days. We predicted that having fewer nationally mandated vacation days would result in stronger well-being increases but also stronger well-being decreases after returning to work. We found that studies conducted in countries with more legally mandated vacation days showed larger well-being increases during vacation but stronger fade-out effects as well. It may be that cultures that legally mandate more paid time off result in individuals placing more value on the nonwork rather than work domain (Leslie et al., 2019). In turn, adaptation-level theory would suggest that they would have a stronger decline in well-being after vacation. The reintroduction of work stress would be an even more negative experience, decreasing well-being to a larger extent. Thus, it seems that for several of the important boundary conditions to holistically understand the vacation–well-being relationship, the inclusion of adaptation-level theory could be fruitful.

Practical Implications

The knowledge of the effectiveness of vacation as an opportunity to improve employee well-being also has practical implications. Our recommendations for organizations are straightforward—they should provide employees with as much vacation time as feasible and encourage employees to use all their provided vacation days. Organizations could also create an environment where there are no perceived penalties for taking vacation time off, as negative perceptions by others for taking vacation have been linked to intentions to take fewer vacation days (Tan & Li, 2021). For employees, we suggest they engage in physical activities whenever possible on vacation. Additionally, our meta-analytic results showed that psychological detachment was the only variable that was positively related to well-being both during and at the first measurement after vacation. This suggests that mentally distancing oneself from work during vacation can lead to more positive well-being benefits being gained from vacation.

Limitations and Additional Future Research Ideas

The findings of this study should also be presented in the context of its weaknesses. One limitation is the dearth of available effect sizes for some of the relationships, including the vacation effect and the return effect. Like the measurement variability with the fade-out effect, many studies do not measure the full-time course of well-being changes from before to after vacation. This does not allow one to examine well-being changes across the entire course of a vacation. Thus, we recommend that future vacation studies adopt more uniform measurement intervals after vacation across vacation studies. For exemplar studies, see Horan et al. (2021) and Flaxman et al. (2023), with two prevacation measures, at least one during vacation measure, and measurement time points each week for at least 4 weeks following vacation. Additionally, another limitation was we imputed values to represent the national context. We recognize however that using a country as a proxy is not as precise as using self-report values on cultural variables. Indeed, there has been shown to be a great deal of within-country heterogeneity on cultural values (Fiske, 2002). Overcoming this limitation would require measurement of meaningful values within primary studies.

A final limitation was our inability to analyze how work and nonwork demands impact the vacation–well-being relationship, despite demands being a core part of the theoretical ideas guiding our research. That is, both the ERM and COR suggest that the vacation–well-being link may depend on the level of job demands, with those facing higher demands benefiting more from vacation. The work–home resources model (ten Brummelhuis & Bakker, 2012) suggests a similar effect, but for nonwork demands. It is also likely that nonwork demands do not cease at the same extent work demands do during vacation and may hinder the well-being benefits gained during vacation. Unfortunately, work and nonwork demands were not measured or reported consistently in primary studies, precluding us from directly testing the role of demands in these relationships, which we urge future researchers to do.

Conclusion

Vacation was previously thought of having only small benefits for employee well-being that fade out quickly (Sonnentag et al., 2022). We conducted this meta-analysis to provide an updated and more precise examination vacation's impact on well-being in terms of the (a) vacation effect, (b) return effect, (c) after effect, and (d) fade-out effect. Our results suggest that well-being improves a large amount from before to during a vacation, and these effects remain, albeit at lower levels, after the vacation ends and seem sustained at least to some extent for a few weeks. Additionally, we found that the length of the vacation, vacation location, nationally mandated vacation days, and national culture moderate some of these relationships. During the vacation, psychologically detaching from work and engaging in physical activity appear to have the most potential for improving well-being. Overall, these results highlight the importance of vacation as an opportunity to take a longer respite away from work and avoid the detriments of accumulated effects of job demands and stressors over time.

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