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RESEARCH ARTICLE

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Continuity in transition: Combining recovery and day-of-week perspectives to understand changes in employee energy across the 7-day week

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Summary

We integrate perspectives from research on recovery from work and perspectives from day-of-week research to predict continuous as well as discontinuous changes in vitality and fatigue. We examine whether changes in recovery experiences and sleep quality predict changes in human energy over the course of the weekend. Furthermore, we consider positive anticipation of work at the start of the workweek and effort during the workweek to predict changes in energy. We collected experience sampling data from 87 employees over the course of 12 days. In total, 2,187 observations nested in 972 days were eligible for analysis. Applying discontinuous growth curve modeling, we found that human energy increases continuously during the weekend, drops on Monday, follows a passageway trajectory from Monday to Thursday, and increases on Friday again. Changes in recovery experiences did not predict changes in energy but increases in sleep quality did. Positive anticipation of work attenuated the drop in vitality on Monday. Effort did not predict changes in energy over the course of the workweek. Our results suggest that the transition between weekends and workweeks and vice versa accounts for considerable changes in human energy and that weekends are recuperative, particularly because they provide the opportunity for better sleep.

KEYWORDS
day-of-week, effort-recovery model, human energy, weekend recovery

1 | INTRODUCTION

Through the lens of the effort-recovery model (Meijman & Mulder, 1998), the processes of strain and recovery can be understood in terms of expending energies during work and replenishing these resources during periods of rest (Fritz et al., 2011). Drawing on this perspective, individual resource status has been a common theme in prior research. In most studies, resource status has been studied in terms of vitality, fatigue, and exhaustion (e.g., Ragsdale & Beehr, 2016; Ryan et al., 2010). However, studies from different research traditions have focused on either vitality or fatigue, making comparisons between studies difficult. Accordingly, in this study, we will focus on trajectories of vitality and fatigue as facets of human energy (Quinn et al., 2012) to reflect changes in one of the most relevant aspects of resource status (Crain et al., 2018; Quinn et al., 2012). This approach of investigating trajectories of human energy is in line with calls for studying recovery

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as a process unfolding over time—returning to pre-stressor levels of functioning (Meijman & Mulder, 1998)—rather than an outcome per se (Sonnentag et al., 2017; Zijlstra et al., 2014).

Recovery research drawing on resource theories suggests that resource status might decrease over the course of the workweek and may be lowest on Friday after 5 days of work (Fritz et al., 2010). Given that the strain process will be reversed, once job demands are removed during the weekend, human energy should increase during the weekend and be highest by the end of the weekend on Sunday evening (Fritz et al., 2010). Interestingly, empirical evidence on trajectories of fatigue over the course of the week contradicts this idea. More specifically, Rook and Zijlstra (2006) found that energetic well-being is lowest on Monday and increases sharply from Wednesday towards the weekend. The trajectories found are in line with evidence on weekly cycles of well-being regarding positive and negative affect (Larsen & Kasimatis, 1990; Ryan et al., 2010). Research in this domain suggests that well-being follows trajectories similar to a sine wave over the course of the week so that well-being is lowest on Monday morning ("Blue Monday" effect) and peaks towards the weekend when people are enjoying or even just looking forward to the weekend ("Thank God it's Friday" effect). This pattern is explained by anticipation processes (Areni, 2008; Stone et al., 2012). The discrepancies between recovery research and research on weekly cycles and day-of-week can be illustrated best at the start of the workweek: Whereas resource models of recovery suggest that employees start the workweek recuperated and rested as reflected in high levels of energy, empirical evidence on weekly cycles of energetic well-being suggests that employees experience the opposite, namely, the lowest levels of resource status on Monday (Rook & Zijlstra, 2006). Rather than stating that empirical evidence has proven assumptions from resource models wrong, we suggest that recovery research and research on weekly cycles of (energetic) well-being may be complimentary and can be combined synergistically to offer a more accurate picture and a more thorough understanding of changes in energy over the course of the week. Whereas recovery research provides specific theoretical arguments for *continuous* changes in energy (restoration of resources, accumulation of strain), the day-of-week research highlights the importance of considering *discontinuous* change at transitions between periods of rest and periods of work. Furthermore, day-of-week research emphasizes the role of anticipation of future events for changes in well-being—an aspect theorized but rarely studied in recovery research. In sum, we expect energy to increase continuously from Friday to Sunday (weekend recovery), to drop at the transition from Sunday to Monday ("Blue Monday"), to follow a flat or slowly decreasing trajectory from Monday to Thursday (eventual accumulation of strain), and to increase at the transition from Thursday to Friday ("Thank God it's Friday") before the next weekend will start.

Beyond describing the general patterns of increases and decreases in energy over the course of the week, insights into the causes of these changes are important to move the study of recovery forward. We integrate variables inspired by different streams of the literature assumed to restore, retain, or reduce energy. More specifically, we study recovery experiences and sleep quality during the weekend as experiences that help restore energy during periods of rest (Fritz et al., 2010). Furthermore, we consider positive anticipation as an experience that helps retain energy during stressful events (Monfort et al., 2015), like the transition from the weekend to the workweek. Finally, we explore the role of effort during the workweek as a variable that reflects exerting and devoting energy on the job and hence may consume or decrease energy over the course of the workweek. Effort is an element drawn from the effort-recovery model (Meijman & Mulder, 1998)—one of the dominant resource models of strain and recovery in the literature. That is, we address drivers of resource restoration, resource retention, and resource reduction in an integrated way. Resource restoration, resource retention, and resource reduction correspond to three phases focal in our research, namely recovery, transition to the workweek, and strain. Studying these variables in concert is conducive to integrating research on weekend recovery (Fritz et al., 2010), day-of-week effects (Ryan et al., 2010), coping with stressful events (Monfort et al., 2015), and accumulation of strain (Meijman & Mulder, 1998).

So far, research on the factors that determine recovery during the weekend has yielded inconsistent findings (Fritz et al., 2010; Ragsdale & Beehr, 2016). To examine whether differences in energy between Friday and Sunday evening or Monday morning reflect actual changes in the focal outcome, it is advisable to go beyond pre-weekend versus post-weekend comparisons. Monitoring recovery experiences (Sonnentag & Fritz, 2007) and energy over the course of the weekend provides the opportunity to probe whether increases in recovery experiences are actually reflected in gains in energy during the same period. We examine changes in psychological detachment, relaxation, control, mastery experiences, and sleep quality as predictors of changes in well-being during the weekend. We complement recovery experiences from the recovery experience questionnaire by sleep quality because sleep is considered a pivotal recovery experience (Crain et al., 2018; Pereira & Elfering, 2014) that may contribute to restore energy during the weekend (Ragsdale & Beehr, 2016).

Our study is not confined to predictors of restoring energy during the weekend. We also study drivers of the reverse process, namely, the build-up of strain across the workweek. Given that one of the core tenets of the effort-recovery model (Meijman & Mulder, 1998) is that effort invested in work (rather than workload or other job demands per se) is the primary cause of strain and given that accumulation effects over the course of the workweek to the best of our knowledge not been tested empirically, it is imperative to study effort during the workweek as a predictor of changes in human energy during the same time.

Finally, we consider positive anticipation as a variable that may be helpful when coping with the energy-draining transition from the weekend to the workweek. The literature on the "Blue Monday" effect (Areni et al., 2011) suggests that the reason for low well-being on Monday is that individuals anticipate 5 days of work ahead of them (Areni, 2008). This assumption has not been examined empirically, and the processes underlying the "Blue Monday" effect are underexplored. Accordingly, we scrutinize whether positive expectations regarding the work ahead facilitate coping with and retaining energy at the weekend–workweek transition. Although our focal predictors emerge from disparate approaches to explaining well-being, they share a common theme: All predictors refer to experiences relevant to changes in energy. They contribute to restoring energy during periods of rest, retain energy in the face of stressful situations, or reduce energy during periods of work. In essence, we draw on the effort-recovery model (Meijman & Mulder, 1998) as a general framework and add specific arguments derived from the cognitive activation theory of stress (Meurs & Perrewé, 2011) and theorizing on transitions (Bliese et al., 2017).

The current study contributes to the literature in at least three ways. First, we draw on the continuous change perspective derived from resource models of employee well-being and supplement them with assumptions from day-of-week research pointing to shifts at the transition between weekends and workweeks. For one, we study the transition between Sunday and Monday ("Blue Monday" effect). For the other, we consider the transition between Thursday and Friday ("Thank God It's Friday" effect). We examine the continuous and discontinuous predictions within the same study drawing on rich experience sampling data and applying rigorous methods that allow to precisely analyze change patterns over time. Second, we study recovery in terms of a process of restoration of energy that unfolds over the course of the weekend, and we scrutinize whether day-to-day changes in recovery experiences and sleep quality from Thursday night to Saturday night are associated with day-to-day changes in energetic states from Friday to Sunday. Third, we combine recovery research and day-of-week research not merely to describe trajectories per se but to consider *drivers* of change in human energy. For one, we study predictors of resource status across days, namely, recovery during the weekend and the build-up of strain over the course of the workweek from the perspective of recovery research. For the other, we add expectations regarding work as an element inspired by day-of-week research and examine whether positive anticipation helps retain energy at the transition between Sunday and Monday. We address questions like "What actually makes for a recuperative weekend?" and "How can the "Blue Monday" effect be alleviated?" These questions are ubiquitous in everyday discourse and highly relevant from a practical perspective. Hence, our study informs employees and employers alike on a topic relevant to almost everyone subjected to the 7-day circle (Zerubavel, 1989).

1.1 | Human energy as a lens for processes of resource restoration, retention, and reduction

In the occupational stress literature, processes of strain (as reflected in decreases in well-being) and recovery from work (as reflected in increases in well-being) have been described using the analogy between employees and batteries (Fritz et al., 2011). During work, employees draw on their cognitive and physical resources; this results in a state of relative resource depletion by the end of the workday and over the course of the workweek (Zijlstra & Sonnentag, 2006). Conversely, during off-job time, employees have opportunities to recharge batteries (Querstret et al., 2016) before they can continue to perform well on the job (e.g., Fritz et al., 2011). In line with this metaphor, the concept of human energy has been applied to occupational settings (Fritz et al., 2011).

Human energy taps into the experience of vitality and lack of fatigue (Thayer et al., 1994). Vitality is a state of high levels of energetic resources, as reflected in feeling enthusiastic, alive (Ryan & Frederick, 1997), and alert (Bostic et al., 2000). Conversely, a state of fatigue is characterized by feeling spent, exhausted, or in need for recovery (Gross et al., 2011). Vitality differs from the vigor facet of work engagement in that it is not explicitly work related. Vitality is also distinct from high activation positive affect both conceptually and empirically (Ryan & Frederick, 1997). According to Schmitt et al. (2017), "vitality does not incorporate the component of valence that positive affect does but refers to the activation of physical and mental resources that determine an individual's capacity for daily functioning" (p. 444). We will not differentiate between fatigue and (emotional) exhaustion here because most scholars use these terms interchangeably (e.g., Frone & Tidwell, 2015). After reviewing a broad range of definitions of fatigue, Frone and Tidwell (2015) concluded that "although variation exists across definitions in terms of a focus on extreme tiredness versus reduced functional capacity, they collectively suggest that the experience of work fatigue is represented by both aspects." (p. 274).

Evidently, vitality and fatigue are indicators of employee well-being that are in line with resource models of employee well-being and are well-suited to track the processes of strain and recovery over the course of the week. Although vitality and fatigue appear to be opposite ends of the same continuum, they differ conceptually regarding the affective tone of these experiences. Whereas vitality is rather neutral in affective terms, fatigue has been conceptualized explicitly as an aspect of (low activation) negative affect (McNair et al., 1992). Furthermore, whereas vitality taps into energy in terms of energetic activation, fatigue has been considered as reflecting an aspect of physical energy (Crain et al., 2018; Quinn et al., 2012). In this sense, despite the common energetic core of the concepts, we expect that trajectories of vitality will not perfectly mirror those of fatigue. Combining vitality and fatigue in one study is also important to integrate recovery and day-of-week research. Whereas day-of-week research has considered vitality only (but not fatigue) (Ryan et al., 2010), recovery research has focused on fatigue and exhaustion (but has not considered vitality) (Rook & Zijlstra, 2006). In this sense, our study may contribute to resolve seemingly conflicting perspectives by exploring whether differences in results between day-of-week research versus recovery research are a function of different variables studied in the two domains.

1.2 | The 7-day circle: Continuous change and transitions

Resource models of strain and recovery describe well-being in terms of continuous change. For instance, Frese and Zapf (1988) refer to strain as a function of exposure time to a given stressor. Strain builds up during periods of exposure to the stressor (e.g., the workweek). The effort-recovery model argues that the reverse process starts as soon as the stressor is removed, for example, during the weekend (Meijman & Mulder, 1998). As outlined above, introducing a discontinuous element may help explain why energy is not at its maximum on Monday morning (i.e., after a period of rest and before a period of work). Discontinuous change refers to an immediate change in a given variable due to a discrete event (Morgeson et al., 2015). More specifically, there is a pre-event phase and a post-event phase, and the rate of change alters immediately at the transition between these phases (Bliese et al., 2017). By contrast, continuous change occurs in the absence of discrete events is a function of exposure time to less discrete factors. We argue that the transition from the weekend to the workweek is such an event that may hamper retaining energy. Accordingly, we propose that the 7-day circle can be best described as a cycle of recovery (restoring resources), coping with the weekend–workweek transition (retaining resources during adaptation), and strain (expending resources). We will consider each phase in-depth below. Throughout this paper, we refer to discontinuous change as an immediate change in energy at transition points. By contrast, we refer to continuous change in terms of change in the absence of discrete triggers of immediate change in energy to emphasize the differences of the two perspectives we want to integrate. Drawing on the distinction between continuous and discontinuous change just introduced, we expect that energy (1) increases continuously from Friday to Sunday (restoring resources during the weekend), (2) decreases at the transition from Sunday to Monday (retaining resources at the transition to the workweek), (3) may decrease continuously from Monday to Thursday (expending resources during the workweek), and (4) increases again in expectation of the weekend at the transition from Thursday to Friday (Thank God it's Friday). Whereas the first and the third phase are consistent with resource models of strain and recovery (Meijman & Mulder, 1998), the second and the fourth phase add elements from day-of-week research (Rook & Zijlstra, 2006; Ryan et al., 2010).

1.3 | Restoring resources: Human energy over the course of the weekend

According to the effort-recovery model (Meijman & Mulder, 1998), periods of rest provide opportunities for load reactions, such as fatigue or exhaustion, to reside. Once employees stop drawing on the same psychophysiological systems as during work, they will return to pre-stressor levels of functioning (i.e., they will recover) (Zijlstra et al., 2014). Accordingly, we expect that individual resource status, as reflected in human energy, will increase over the course of the weekend. We expect that energy will increase slowly and continuously from Friday to Sunday because psychophysiological unwinding from work may not take place immediately but may take some time to unfold (Geurts & Sonnentag, 2006). In line with this idea, research on recovery during vacations suggests that levels of well-being increase in a linear way within the first days off the job (de Bloom et al., 2013).

Although the weekend has been assumed to be a major opportunity for employee recovery (Fritz & Sonnentag, 2005), at present, there are only a few studies on recovery that have focused on the weekend. Most studies from occupational health research have inferred changes in recovery outcomes by predicting, for instance, exhaustion on Sunday or Monday after controlling for levels of exhaustion on Friday (Fritz et al., 2010; Ragsdale et al., 2011; Ragsdale & Beehr, 2016). A closer look at the mean levels of the focal outcomes suggests that on average, there are either some slight decreases in exhaustion from Friday to Monday on average (Ragsdale et al., 2011; Ragsdale & Beehr, 2016) or no significant changes at all in fatigue and joviality from Friday to Sunday (Fritz et al., 2010). In contrast, a day-level study by Rook and Zijlstra (2006) from Monday to Sunday provides evidence for a sharp decline in fatigue towards the end of the week (see also Larsen & Kasimatis, 1990; Stone et al., 2012; Wang et al., 2016 for similar trajectories in positive and negative affect). However, continuous increases in energy within the weekend are not trivial. For instance, some studies from day-of-week research have not differentiated between energy on Friday versus Saturday versus Sunday (Ryan et al., 2010), suggesting a sharp increase between Thursday and Friday and no changes in vitality within the weekend. By contrast, the research on recovery particularly during the first days of vacation (de Bloom et al., 2013) suggests continuous increases in energy. The inconsistent predictions from recovery research versus day-of-week research reported above call for further empirical scrutiny. In line with resource models of recovery and in contrast to day-of-week research, we explicitly state a linear increase of resource status over the course of the weekend. Examining linear increases in energy rather than sharp workweek-weekend contrasts and constantly high levels of energy over the course of the weekend is consistent with the idea of recovery as a process of slow unwinding from work and restoration of resources over time. We hypothesize:

Hypothesis 1: Human energy, as reflected in (a) high levels of vitality and (b) low levels of fatigue, will increase continuously from Friday to Sunday (weekend–recovery–hypothesis).

1.4 | Retaining resources: Human energy at the transition from the weekend to the workweek

Several studies from the day-of-week literature suggest that retaining resources at the transition from Sunday to Monday is not trivial and that this transition may result in a downward shift in well-being (Areni et al., 2011). Ryan et al. (2010) have explained weekend–workweek differences in vitality by differences in basic need satisfaction between these periods. More specifically, workdays provide less opportunity for satisfying the need for autonomy and relatedness (Ryan et al., 2010). Hence, the start of the workweek requires adapting to a different daily schedule providing less discretion than a typical weekend day (Zerubavel, 1989). Adapting to these changes is likely to take its toll (Reis et al., 2000) and should be reflected in a decrease in human energy at the transition from Sunday to Monday. So far, empirical evidence is supportive of a drop in energy at the transition from the weekend to the workweek. For instance, in their analysis of fatigue over the course of the week, Rook and Zijlstra (2006) found significantly higher levels of fatigue at the beginning of the workweek when compared with the weekend. Furthermore, the within-person contrast between vitality on working days versus the weekend in a sample of employees reported by Ryan et al. (2010) may result from a downward shift in energy at the transition between Sunday and Monday, too. Such a drop in energy at the transition between Sunday and Monday is also consistent with empirical evidence of Sunday–Monday contrasts in Twitter message content (Wang et al., 2016), hedonic tone (Stone et al., 2012), and positive and negative affect (Larsen & Kasimatis, 1990). The heterogeneity of outcomes considered, methods applied, and levels analyzed in these studies does not allow for unambiguous conclusions and call for further scrutiny. Hence, we examine whether there is a within-person drop in human energy at the transition from Sunday to Monday using a growth curve perspective. Of note, whereas prior studies have considered weekend–workweek contrasts in general, our study is the first to examine specifically the transition taking place between Sunday and Monday. We state:

Hypothesis 2: Human energy, as reflected in (a) high levels of vitality and (b) low levels of fatigue, will decrease from Sunday to Monday (Blue Monday hypothesis).

1.5 | Expending resources: Human energy over the course of the workweek

Fritz et al. (2011) argue that "vitality is sapped by the end of the workweek" (p. 30). This perspective is consistent with the general idea of the effort-recovery model that facing job demands over time results in lower levels of well-being, particularly if employees lack opportunities for recovery. As will be discussed in-depth below, energy on Friday may differ considerably from energy during the other typical workdays due to anticipation of the weekend (Ryan et al., 2010; Stone et al., 2012; Wang et al., 2016). We will focus our review on trajectories from Monday to Thursday.

The basic tenets of the effort-recovery model and lay theories about workweek strain suggest that energy will likely decrease over the course of the workweek as employees draw on and spend a substantial amount of resources while working. Interestingly, empirical evidence on trajectories of energy over the course of the workweek does not confirm this idea at all. For one, several experience sampling studies on indicators of energy did not explicitly address or report systematic changes in indicators of energy over the course of the workweek (e.g., Kubo et al., 2018; Mark et al., 2014; Ryan et al., 2010). For the other, Rook and Zijlstra (2006) even found significant decreases (rather than increases) in fatigue towards the end of the workweek beginning on Wednesday (cf. Larsen & Kasimatis, 1990 for a similar pattern in affective well-being). However, empirical evidence on trajectories in energy over the course of the workweek is scarce. Given the nascent state of research regarding trajectories in energy over the course of the workweek, we address this issue in the form of a research question:

Research Question 1: Does human energy, as reflected in (a) high levels of vitality and (b) low levels of fatigue, systematically increase, decrease or follow a flat passageway trajectory from Monday to Thursday?

1.6 | Human energy at the transition from workweek to weekend: Thank God it's Friday

We think that the transition between the workweek and the weekend deserves further scrutiny. Although scholars in recovery research have argued that levels of energy should be lowest on Friday (Fritz et al., 2010), day-of-week research suggests that well-being may increase towards the end of the workweek and be considerably higher already on Friday as individuals look forward to leisure activities during the weekend (Sonnentag, Mojza, et al., 2008). Accordingly, upon studying workweek-weekend contrasts in vitality, Ryan et al. (2010) considered Friday part of the weekend. Hence, on Friday, levels of vitality may be more similar to Saturday and Sunday than Monday to Thursday. Rook and Zijlstra (2006) found that fatigue starts to decrease already within the workweek and decreases considerably from Thursday to Friday. In line with this idea, in their analysis of day-to-day contrasts in cross-sectional data, Stone et al. (2012) found that affective, well-being as reflected in momentary positive and negative affect, is higher on Friday when compared to all other typical workdays. In a similar vein, Wang et al. (2016) report a "Friday dip" in Twitter message content related to negative emotions and occupational stress. In sum, over the course of the workweek from Monday to Friday, there may be two processes involved that affect energy. On the one hand, there may be decreases in energy from Monday to Thursday, consistent with the accumulation of strain as outlined above. On the other hand, energy may increase at the transition from Thursday to Friday. Unfortunately, except for the study by Stone et al. (2012), which refers to between-person differences, prior research on weekend recovery or day-of-week effects did not disentangle these two processes. Put differently, a rigorous test of the "Thank God it's Friday" effect at the within-person level of analysis provides a clearer picture of the patterns of changes in energy, particularly at the end of the workweek. In line with the "Thank God it's Friday" effect, we state:

Hypothesis 3: Human energy, as reflected in (a) high levels of vitality and (b) low levels of fatigue, will increase from Thursday to Friday (Thank God it's Friday hypothesis).

1.7 | Recovery experiences as predictors of the restoration of energy during the weekend

Among the key drivers of restoring resources are recovery experiences (Sonnentag & Fritz, 2007). Recovery experiences imply that individuals either stop drawing on the same resources as during work (e.g., psychological detachment and relaxation) or satisfy psychological needs (e.g., control, mastery experiences) (D. B. Newman et al., 2014; Ragsdale & Beehr, 2016). Both stopping demands and satisfaction of needs should result in increases in energy (Meijman & Mulder, 1998; Ryan & Frederick, 1997). Several studies have examined the role of recovery experiences in replenishing resources over the course of the weekend. Resource status was operationalized in terms of need for recovery, exhaustion (Ragsdale et al., 2011), fatigue, joviality (Fritz et al., 2010), self-regulatory capacity, state optimism, and burnout (Ragsdale & Beehr, 2016). On the one hand, Fritz et al. (2010) found detachment, relaxation, and mastery to predict increases in joviality (but no effect on fatigue). In a similar vein, Ragsdale et al. (2011) provided evidence that detachment, relaxation, and control are linked to a reduction of need for recovery and emotional exhaustion. On the other hand, Ragsdale and Beehr (2016) reported that relaxation and mastery experiences did not predict changes in resource status and that higher levels of detachment were even associated with decreases in state optimism and ultimately increases in burnout. In their study, control was the only recovery experience that was beneficial for indicators of resource status. These inconsistencies call for further scrutiny.

More specifically, we argue that extending the research design to several observations over the course of the weekend would provide for more precision on the actual trajectories of human energy over the course of the weekend. Energy may increase in terms of recovery but may already start to decrease again before the next workweek starts as employees anticipate job demands already on Sunday (Rook & Zijlstra, 2006; Zijlstra & Sonnentag, 2006). Given that two observations per weekend are insufficient to address these questions applying an intensified longitudinal design and growth curve perspectives appears to be a logical next step. Measuring recovery experiences and human energy several times over the course of the weekend allows examining whether changes in recovery experiences actually precede and find expression in changes in human energy. Importantly, evidence in favor of changes in recovery experiences predicting changes in human energy would facilitate interpretation of results, in the sense that recovery experiences are actual causes of gains in human energy. Although we will consider the initial level of recovery experiences at the end of the workweek on Thursday evening (intercepts) too, our focus is on changes in these variables from Thursday evening to Saturday evening. Moving beyond prior research on mere workweek-weekend contrasts in basic need satisfaction as predictors of contrasts in energy (Ryan et al., 2010), we focus on continuous changes in recovery experiences from Thursday evening to Saturday evening. In line with the structure of the 7-day week (Zerubavel, 1989), we expect that Friday and particularly Saturday will provide for a plus in opportunity for recovery experiences to occur when compared with Thursday as a common workday. Ideally, recovery experiences will increase from Thursday evening to Saturday. In turn, these increases should be followed by a similar trajectory in human energy from Friday to Sunday. Unlike, day-level analyses commonly applied in recovery research, this perspective of change in recovery experiences predicting change resource status is consistent with recovery as a process and allows recovery experiences to precede recovery. Hence, it renders alternative explanations, such as (common) method variance, less plausible. In sum, we state:

Hypothesis 4: Changes in (i) detachment, (ii) relaxation, (iii) control, and (iv) mastery experiences from Thursday to Saturday are positively related to changes in human energy from Friday to Sunday as reflected in (a) high levels of vitality and (b) low levels of fatigue.

1.8 | Sleep as a predictor of the restoration of energy during the weekend

Upon studying recovery experiences, several authors involved in research on weekend recovery have called for examining the role of sleep quality in explaining changes in recovery outcomes (Fritz et al., 2011; Fritz & Sonnentag, 2005; Ragsdale & Beehr, 2016). Like the recovery experiences discussed above, sleep implies that individuals stop drawing on the same resources as during work. As compared to being awake, sleep is associated with changes in cerebral activity (Mignot, 2008) and reorganizing of neural activity of the brain in the service of restoring cognitive functioning and energy (see Barnes et al., 2011; cf. Schmitt et al., 2017). Accordingly, sleep deprivation affects subsequent states of alertness and feelings of fatigue (Mullins et al., 2014). In a similar vein, low quality of sleep or insomnia is associated with lower levels of alertness (Totterdell et al., 1994) and higher levels of fatigue (Scott & Judge, 2006). A considerable volume of research suggests that sleep is one of the most important predictors of recovery (see Crain et al., 2018, for a review). More specifically, day-level studies found sleep to be associated with human energy the next day (Scott & Judge, 2006; Sonnentag, Binnewies, & Mojza, 2008). In a recent study, Schmitt et al. (2017) found that the level of sleep quality predicted increases in vitality in the morning. In line with this argument and extending this line of research, we leverage changes in sleep quality to predict changes in human energy over time. Following a similar rationale as for recovery experiences, we suggest that opportunities for better sleep increase towards Saturday night and that sleep quality may increase from Thursday night to Saturday night. In turn, energy should increase from Friday to Sunday. Again, the time lag between predictor and criteria is consistent with recovery as a slow and lagged process of restoring resources. Furthermore, due to the time lag, changes in sleep quality actually precede changes in human energy, thus increasing the plausibility of potential causal interpretation. In sum, we expect:

Hypothesis 5: Changes in sleep quality from Thursday night to Saturday night are positively related to changes in human energy from Friday to Sunday, as reflected in (a) vitality and (b) fatigue.

1.9 | Effort as a predictor of the expenditure of human energy during the workweek

We supplement our analyses on drivers of recovery by studying a variable that may be relevant for the reverse process of recovery, namely, accumulation of strain across the workweek. More specifically, we focus on the expenditure of effort during the workweek. As outlined above, a key tenet of the effort-recovery model is that engaging in work is associated with the consumption of resources (Meijman & Mulder, 1998). For instance, experience sampling research suggests that proactive work behavior in the afternoon tends to predict higher levels of bedtime fatigue at the day level (Fay & Hüttges, 2017). To extend prior research, we scrutinize the role of effort rather than workload. We focus on effort (rather than job demands) because effort taps into the behavioral responses of the employee that actually consume energy. We focus on effort or physical engagement (Rich et al., 2010) because typical items explicitly refer to exerting and devoting energy to work. Hence, physical energy per se can be expected to consume energy and corresponds best to effort in the effort-recovery model. By contrast, within the conceptualization of job engagement by Rich et al. (2010), emotional engagement refers to positive affect during work (e.g., feeling energetic), and cognitive engagement taps into allocating attention across life domains and being absorbed by work. Physical engagement is a better fit than work engagement because vigor, dedication, and absorption are not unambiguously behavioral in nature, mix several concepts (D. A. Newman & Harrison, 2008), and may even overlap conceptually with our outcome variables (e.g., feeling bursting with energy) (see Wood & Harms, 2016 for a discussion of conceptual overlap and tautological associations between variables).

The effort-recovery model suggests that there may be an accumulation of strain effects over time (depletion of energy) if employees lack opportunities for full recovery. Furthermore, scholars in recovery research (Fritz et al., 2010; Fritz & Sonnentag, 2005) have argued that energy will be drained over the course of the workweek, and resource status should be lowest on Friday. Given that these assumptions have, to the best of our knowledge, not been studied sufficiently, we examine the role of effort over the course of the workweek to predict changes in human energy. Accordingly, we state:

Hypothesis 6: Employee effort is linked to decreases in human energy over the course of the workweek as reflected in (a) high levels of vitality and (b) low levels of fatigue. The higher effort, the more pronounced the decrease in energy.

1.10 | The role of anticipation in transitions between the weekend and the workweek

Finally, we consider a variable that should explain why some individuals may retain more energy at the transition between weekends and workweeks than others. Above, we have argued that the transition from the weekend to the workweek is associated with a drop in energy. Cognitive activation theory of stress (Meurs & Perrewé, 2011) and the transactional stress model (Lazarus & Folkman, 1984, 1987) argue that anticipation of potentially stressful situations is a pivotal determinant of changes in well-being. Hence, expectations regarding the workweek may explain why some individuals have a large drop in energy at the transition, whereas others may experience no change in energy at all. Drawing on the transactional stress model, we argue that positive anticipation of work is accompanied by appraisals of the upcoming workweek as benign/positive or even challenging. Consequently, more positive emotions and less negative emotions should be generated (e.g., Folkman & Lazarus, 1985; Meurs & Perrewé, 2011), and this should further facilitate coping with the transition between the weekend and the workweek. In our study, we will focus on positive anticipation rather than negative anticipation because we expect positive anticipation to show a clearer pattern with human energy than negative anticipation. The anticipation of a positive event most likely will have energizing effects. In several lab experiments on positive anticipation, Monfort et al. (2015) found that anticipating a positive event induced positive emotions both during and after a stressful situation and facilitates coping with and recovering from stress. Similarly, previous field studies suggest that positive anticipations regarding weekends and vacations contribute to positive affective well-being (Sonnentag, Mojza, et al., 2008; Syrek et al., 2018). In contrast, negative anticipation could be potentially energizing and/or paralyzing to the individual. For example, Van Laethem et al. (2017) found nonsignificant associations between negative anticipation of a stressful work event and energy at the day level (whereas positive anticipation yielded significant bivariate correlations with energy). Similarly, research on workload anticipation shows that the expectation of high workload does not show direct relationships with human energy and suggests that employees' stress mindset and coping behaviors play a role in how the anticipation of work stressors relate to human energy (Casper et al., 2017; Casper & Sonnentag, 2020). Drawing on this rationale, we expect that positive anticipation will facilitate coping with this transition and retaining energy. Accordingly, we state:

Hypothesis 7: Positive anticipation of work is linked to the drop in human energy from Sunday to Monday, as reflected in (a) decreases in vitality and (b) increases in fatigue. The higher positive anticipation, the less pronounced the drop in energy.

2 | METHODS

2.1 | Procedure

We collected data within a larger research project that combined a study on job demands and self-regulation (Prem et al., 2018) and the present study.[1] We conducted an experience sampling study over 12 consecutive days beginning on Friday and ending on Tuesday. This period included two weekends and one complete workweek in between. This design is particularly well suited to study trajectories in energy at the transition between workweeks and weekends because it provides sufficient data to specify several time slopes and contrasts (Bliese & Lang, 2016). Participants filled in three short electronic surveys per day on workdays: a morning survey upon getting up, a lunchtime survey on workdays, and an afternoon survey upon leaving work. Participants were asked to fill in the lunchtime survey only on workdays because most of the measures in the lunchtime survey referred to work and were not relevant on free days. On free days, participants filled in two surveys per day: one in the morning upon getting up and one in the afternoon. The morning surveys were accessible from 5 to 10 a.m. The lunchtime survey was accessible from 11 p.m. to 2 p.m. The afternoon survey was accessible from 3 p.m. until midnight. We applied rather broad time windows to accommodate to the individual schedules of the participants and asked participants to access the surveys around the same time each day. We used electronic surveys and invited participants up to three times a day, sending an email containing the access link. Demographic information was captured in a baseline survey 1 week in advance of the experience sampling surveys. An overview of the design of the diary study is presented in Figure 1.

2.2 | Sample

The sample consisted of employees enrolled in a psychology program at a German university that offers distance-learning courses. Most of our participants had either general qualifications for university entrance (42%) or higher qualifications (40%). The average age was 35.47 years (*SD* = 9.75). In our sample, 70.6% were female, 22.9% were male, and 6.4% did not provide this information. Roughly half of the participants were married or lived together with their partners (47.8%), about a quarter (26.6%) had children. The average job tenure was 12.94 years (*SD* = 10.21), and the average working time was 34.97 hours per week (*SD* = 11.21). More than half (55.0%) of the employees worked full time, and 27.6% had a leadership position. Employees worked in health care and social services (32.1%), public administration (12.8%), marketing and sales (11.9%), industry (9.2%), consulting and finance (7.3%), research and development (7.3%), information technology (6.4%), and other branches. In total, we received 2,463 within day-level assessments of vitality and fatigue nested in 1,129 days nested in 109 individuals. On average, participants provided 22.6 short surveys per person. The response rate for the initial sample was 71% out of 3,488 possible self-reports. Due to missing values in the focal predictors (e.g., positive anticipation on Monday) for some of the days and participants studied, the sample size for our focal analyses was reduced to 2,180 within day-level assessments nested in 966 days nested in 87 individuals. The response rate for the focal sample was 63% out of 3,488 possible self-reports. In Table 1, we provide the correlation matrices for the initial sample as well as the sample used in the focal analyses.

2.3 | Measures

Figure 1 illustrates when the focal variables were assessed. Human energy was measured throughout all surveys. We applied three items from Ryan and Frederick (1997) adapted to German by Schmitt et al. (2017) to measure vitality. The items were "Right

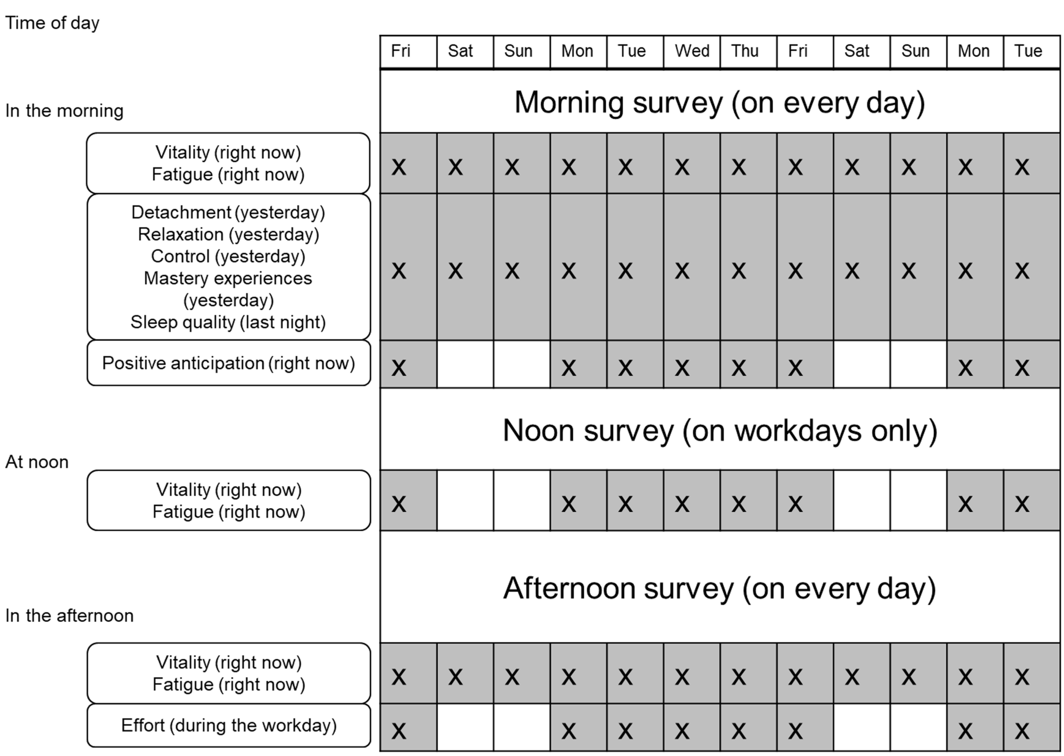

FIGURE 1 Overview of the design of the diary study across 12 consecutive days and the variables captured on each day

TABLE 1 Means, standard deviations, and zero-order correlations between study variables at three levels (within days, between days, between individuals)

	Vitality	Fatigue	Detachment	Relaxation	Control	Mastery experiences	Sleep impairment	Positive anticipation	Effort	Sex	Age
Level 1 (within days)											
Vitality	(.90)	−.67									
Fatigue	−.68	(.80)									
Level 2 (between days)											
Vitality	(.98)	−.71	.17	.26	.28	.19	−.50	.60	.18		
Fatigue	−.72	(.98)	−.13	−.17	−.21	−.16	.42	−.46	−.10		
Detachment	.19	−.17	(.88)	.33	.40	.07	−.15	.07	.06		
Relaxation	.26	−.18	.34	(.89)	.60	.13	−.13	.17	.11		
Control	.30	−.23	.41	.60	(.82)	.38	−.16	.23	.24		
Mastery experiences	.20	−.17	.09	.12	.38	(.89)	−.10	.22	.20		
Sleep impairment	−.47	.41	−.15	−.13	−.15	−.11	(.72)	−.28	−.06		
Positive anticipation	.61	−.47	.12	.17	.24	.24	−.26	(.77)	.24		
Effort	.22	−.12	.05	.10	.25	.21	−.06	.23	(.88)		
Level 3 (between individuals)											
Vitality	(.99)	−.75	.18	.33	.42	.32	−.53	.70	.29	−.31	.13
Fatigue	−.78	(.96)	−.13	−.14	−.31	−.26	.49	−.51	−.25	.22	−.26
Detachment	.21	−.21	(.98)	.13	.27	−.09	−.16	.05	.00	−.05	−.13
Relaxation	.30	−.15	.22	(.94)	.58	.24	−.18	.24	.24	−.15	−.11
Control	.52	−.40	.27	.46	(.91)	.43	−.25	.39	.37	−.11	.00
Mastery experiences	.37	−.29	−.04	.20	.47	(.97)	−.18	.32	.39	−.02	.28
Sleep impairment	−.44	.42	−.13	−.16	−.22	−.14	(.86)	−.33	−.07	.31	.01
Positive anticipation	.72	−.56	.15	.23	.45	.40	−.25	(.97)	.39	−.20	.20
Effort	.28	−.23	−.01	.16	.38	.37	−.09	.35	(.98)	.01	.16
Sex	−.22	.21	−.04	−.15	−.06	.03	.29	−.14	.00	–	.01
Age	.14	−.23	−.09	−.09	.03	.34	−.08	.16	.19	.08	–
M	3.07	2.61	3.37	2.96	3.58	2.89	1.84	3.02	3.45	1.75	35.47
$SD_{\text{Level 1}}$	0.76	0.82									
$SD_{\text{Level 2}}$	1.00	1.06	1.17	1.05	0.89	1.15	0.80	1.05	1.05		
$SD_{\text{Level 3}}$	0.72	0.79	0.86	0.64	0.56	0.77	0.53	0.92	0.89	.43	9.75

Note. Correlations for the focal sample are presented below the diagonal. $N_{\text{occasions}}$ = 2,180; N_{days} = 996; $N_{\text{individuals}}$ = 87. Correlations for the initial sample are presented above the diagonal. $N_{\text{occasions}}$ = 2,463; N_{days} = 1,129; $N_{\text{individuals}}$ = 109. Detachment, relaxation, control, mastery, sleep quality, positive anticipation, and effort were measured once per day; therefore, they do not vary within days. Cronbach's alpha at Levels 1–3 is presented on the diagonals in parentheses. At Level 2, correlations with $r \geqq |.07|$ were significant at p = .05, and with $r \geqq |.09|$ were significant at p = .01. At Level 3, correlations with $r \geqq |.20|$ were significant at p = .05 and correlations with $r \geqq |.27|$ with significant at p = .01.

now, I feel alive and vital," "Right now, I feel energized," and "Right now, I feel alert and wake." Furthermore, we applied three items from the fatigue subscale of the German adaptation of the Profile of Mood States (Albani et al., 2005) to measure fatigue. Participants reported to what extent they felt "exhausted," "weary," and "worn out" right now. Both scales ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

Recovery experiences were measured in the morning surveys with 16 items using the recovery experience questionnaire (Sonnentag & Fritz, 2007). The scale has been developed and validated in German (Sonnentag & Fritz, 2007). Participants were asked to report psychological detachment, relaxation, control, and mastery experiences yesterday during leisure time. Sample items are "I forgot about work," "I did relaxing things," "I decided my own schedule," and "I sought out intellectual challenges." Response format ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

We included five items from the insomnia severity index (Bastien et al., 2001) in the morning surveys. We applied items adapted to German by other researchers (Syrek et al., 2017). Hence, in our study, high levels of sleep impairment reflect low sleep quality. A sample item is, "Please rate the severity of the sleep problem difficulty falling asleep." The items were rated on a 5-point Likert scale ranging from 1 (*none*) to 5 (*very severe*).

We gauged positive anticipation of work, applying three items tapping into prospective appraisals of the workday and the tasks ahead. We adapted one item referring to positive anticipation of the weekend from the literature (Sonnentag, Mojza, et al., 2008) and changed the target to the upcoming workday rather than the weekend. We used the following items: "I am looking forward to a pleasurable workday," "I am looking forward to the workday," and "Today, I will be dealing with interesting tasks." The scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Positive anticipation was part of the morning surveys on workdays only. In this study, only measures from Monday were used to tap into start of the workweek appraisals. Comprehensive information on the reliability and validity of this scale is provided in Table S7.

We applied three items from the physical engagement scale developed by Rich et al. (2010) to capture effort in the afternoon survey. We chose the three highest loading items from the full scale and adapted the items to the day-level. The three items were "Today, I exerted my full effort to my job," "Today, I tried my hardest to perform well on my job," and "Today, I strove as hard as I could to complete my job." The scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

2.4 | Analytic strategy and procedures

In a first step, we examined the psychometric properties of our focal measures. We specified multilevel confirmatory factor analyses (MCFAs) using Mplus 8.2 (Muthén & Muthén, 1998–2017) to show that the adapted scales measure different underlying constructs. We also estimated multilevel alphas (Geldhof et al., 2014), and, given satisfactory reliability, we formed composite scores for each scale, applying the mean across the items of each scale.

In the next step, we specified discontinuous growth models (Bliese et al., 2017) leveraging a multilevel regression approach (Bliese & Ployhart, 2002) using the "nlme" library (Pinheiro & Bates, 2000) in R. We specified separate multilevel regression models for predicting vitality and fatigue. In the context of these analyses, within-person changes in the outcome variables are primarily a function of time (Singer & Willett, 2003). Whereas most growth models in the literature refer to one linear slope, we entered several time slopes to make specific predictions in our analyses. The coding of time variables is presented in Table S1. When specifying growth models in a multilevel framework, growth models are usually two-level models, and time slopes refer to the lowest level (Level 1). By contrast, for the purposes of our study, we specified three-level models in which surveys (Level 1) are nested within days (Level 2), and days are nested within individuals (Level 3). Our focus is predicting changes in employee energy from day to day (Level 2). Accordingly, we used time in days centered at the first day of the study (e.g., for the weekend-recovery slope: Friday = 0, Saturday = 1, Sunday = 2, etc.) to predict employee energy at Level 2. Given that there are transitions (Bliese et al., 2017) between the weekend and the workweek and we hence expect energy to systematically increase and decrease over the course of a 7-day week, we specified discontinuous growth models following procedures described by Bliese and Lang (2016). Discontinuous growth models allow specifying very specific predictions when the rate of change in the outcome may change. Accordingly, we created a series of time variables to specify each of the trajectories (e.g., weekend slope from Friday to Sunday)[2] and transitions (e.g., the time before vs. after Monday). The coding of time was aligned with absolute rather than relative change. Put another way, we specified a linear increase from Friday to Sunday (Fri = 0, Sat = 1, Sun = 2), a discontinuous contrast from Sunday to Monday (Fri = 0, Sat = 0, Sun = 0, Mon = 1), a continuous trajectory from Monday to Thursday (Fri = 0, Sat = 0, Sun = 0, Mon = 0, Tue = 1, Wed = 2, Thu = 3) and so on. As we expected the rate of change in our outcomes to differ between persons, we specified random slopes for the focal time variables at Level 2.

We used changes in recovery experiences and sleep quality over the course of the weekend to predict +1-day lagged changes in energy. Our analyses follow the same rationale as latent change score models (e.g., Syrek et al., 2018). As a first step, each of the recovery experiences during the weekend was regressed on time in days (i.e., from Thursday [night] to Saturday [night]). We confined these growth models to the first weekend and specified a linear slope (Fri = 0, Sat = 1, Sun = 2, Mon = NA, etc.). In a second step, person-specific recovery experiences intercepts (starting levels on Thursday night) and slopes (rate of change in recovery experiences from Thursday night to Saturday night) were extracted and saved as person-level variables (Level 3). We then entered the individual intercepts and slopes in recovery experiences as predictors of the intercepts in employee energy and as cross-level moderators of the weekend slope (Friday to Sunday) in energy at the between-day level

(Level 2). Hence, in the case of our study, significant cross-level interactions suggest that changes in the predictor variables account for the strength of change in energy over time.

To examine whether positive anticipation at the start of the workweek accounted for the expected drop in energy at the transition between the weekend and the workweek, we entered positive anticipation on Monday as a Level-3 covariate and a Monday-transition × positive anticipation cross-level interaction. We followed a similar approach to examine whether the level of effort predicts the rate of change in energy over the course of the workweek (Level 2). For each participant, we calculated the individual average level of effort across the focal workweek and included the person-mean (Level 3) as a covariate and the workweek slope × effort cross-level interaction. All cross-level moderators were grand-mean centered. While centering at the grand mean does not change the pattern of results, it facilitates the interpretation of the intercepts as starting levels for an average participant.

Following procedures described by Bliese and Ployhart (2002), we examined whether specification of heteroscedasticity and autocorrelation improved model fit. Given that both specifications did not improve model fit, we omitted them from the focal models. In line with recommendations in the discontinuous growth modeling literature, we have orthogonalized the focal time slopes (Bliese et al., in press) using the pdDiag-function in nlme. In other words, we set the correlations among the focal time slopes at Level 2 to 0. This approach is recommended for power considerations and allows specifying all (rather than only two or three) slopes as random. The regression equation and the R-syntax for the focal models are presented in the supplemental materials section.

3 | RESULTS

3.1 | Preliminary analyses

To show that all scales included in the main analyses measured distinct constructs, we conducted MCFAs in Mplus 8.2 (Muthén & Muthén, 1998–2017). The MCFAs included vitality, fatigue, detachment, relaxation, control, mastery, sleep impairment, positive anticipation, and effort. Because vitality and fatigue were measured on multiple occasions per day, we conducted three-level MCFAs. The MCFAs showed a satisfactory fit of the hypothesized 9-factor model (χ^2 = 1688.5, df = 864, RMSEA = .02, CFI = .96 TLI = .96, $SRMR_{Level1}$ = .07, $SRMR_{Level2}$ = .05, $SRMR_{Level3}$ = .09, AIC = 76,692.4) that was superior to alternative 8-factor models (please see Supporting Information for details). Hence, the constructs are empirically distinct at all levels of analysis. We also estimated multilevel alphas (Geldhof et al., 2014). For vitality and fatigue, we modeled alphas across three levels of analysis (measurement occasion, day level, and person level). For the other constructs, we modeled alphas only on the day and person levels. Alphas are presented in Table 1. Alphas at the within-day level were .90 for vitality and .80 for fatigue; alphas at the day level ranged from .72 for sleep impairment to .98 for vitality; alphas at the person level ranged from .86 for sleep impairment to .99 for vitality. Given that the alphas for above .70 for all construct across all levels, we formed composite scores for each scale, applying the mean across the items of each scale. Intraclass correlations (ICC) indicate that there is variance in vitality and fatigue at all levels (vitality: ICC_{Level3} = .37, ICC_{Level2} = .55; fatigue: ICC_{Level3} = .41, ICC_{Level2} = .57).

3.2 | Trajectories in human energy over time

Hypotheses 1– 3 and Research Question 1 refer to the time trends over the course of the workweek and the weekend. Results of the focal multilevel regression models are presented in Table 2. We found significant positive slopes of vitality for Weekend 1 (γ = 0.15, SE = 0.05, t = 3.33, p < .001) and a similar trend for Weekend 2 (γ = 0.08, SE = 0.04, t = 1.93, p = .054), albeit this slope was not significant according to conventional levels. We found the inverse pattern for fatigue in Weekend 1 (γ = –0.24, SE = 0.05, t = –4.91, p < .001) and Weekend 2 (γ = –0.10, SE = 0.04, t = –2.49, p = .013). The trajectories of fatigue were more pronounced and more consistent across the focal weekends. In sum, vitality increases, and fatigue decreases from Friday to Sunday, following a linear trajectory—a finding in line with Hypothesis 1. Furthermore, there is a significant transition effect in energy from Sunday to Monday. That is, energy changes discontinuously at the transition. For one vitality drops considerably from Sunday to Monday after Weekend 1 (γ = –0.31, SE = 0.08, t = –3.71, p < .001) and tends do so after Weekend 2 (γ = –0.19, SE = 0.10, t = –1.93, p = .054), for the other fatigue increases from Sunday to Monday after Weekend 1 (γ = 0.21, SE = 0.09, t = 2.30, p = .021) and Weekend 2 (γ = 0.22, SE = 0.10, t = 2.28, p = .021). In line with Hypothesis 2, we found evidence for discontinuous drops in energy at the transition between the weekend and the workweek. Whereas the results for fatigue were consistent across the two weekends, the results for vitality were not perfectly consistent across the focal weekends. Still, they tended to be consistent with our prediction, too.

Addressing Research Question 1, we did not find significant workweek time slopes neither for vitality (γ = –0.03, SE = 0.04, t = –0.75, p = .449) nor for fatigue (γ = 0.03, SE = 0.04, t = 0.81, p = .421) over the course of the focal workweek. Our findings suggest that on average levels of energy follow a flat passageway trajectory from Monday to Thursday.

Addressing the "Thank God it's Friday" effect, we found evidence for a significant upward shift in vitality (γ = 0.26, SE = 0.08, t = 3.07, p = .002) and a drop in fatigue (γ = –0.19, SE = 0.08, t = –2.38, p = .023) at the transition between Thursday and Friday. These results are in line with Hypothesis 3 and suggest that levels of energy on Friday are higher than from Monday to Thursday. The trajectories of vitality and fatigue over the 12-day period from Friday to Tuesday are depicted in Figure 2.

3.3 | Recovery experiences, sleep, and changes in energy over the course of the weekend

Furthermore, we considered predictors of increases in energy over the course of the weekend. In a first step, we estimated trajectories of

TABLE 2 Results from growth curve modeling predicting trajectories of vitality and fatigue in the focal sample

	Vitality			Fatigue		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*
Level 3 (between individuals)						
Intercept	3.00	0.07	42.59	2.86	0.08	36.05
Detachment (intercept)	0.06	0.09	0.69	−0.06	0.10	−0.64
Detachment (slope)	0.00	0.19	0.00	0.01	0.22	0.06
Relaxation (intercept)	0.22	0.11	2.01*	−0.18	0.12	−1.49
Relaxation (slope)	0.34	0.25	1.35	−0.52	0.28	−1.85*
Control (intercept)	0.11	0.13	0.79	−0.02	0.15	−0.13
Control (slope)	0.01	0.26	0.02	0.35	0.29	1.21
Mastery (intercept)	0.13	0.09	1.36	−0.08	0.10	−0.74
Mastery (slope)	−0.08	0.13	−0.60	−0.10	0.15	−0.69
Sleep impariment (intercept)	−0.23	0.14	−1.64	0.47	0.16	2.94**
Sleep impariment (slope)	0.18	0.22	0.83	0.16	0.25	0.63
Positive anticipation (Monday)	0.27	0.06	4.77***	−0.22	0.07	−3.17***
Workweek effort	0.05	0.06	0.76	−0.13	0.08	−1.69†
Level 2 (between days)						
Weekend 1 slope (WE1)	0.15	0.05	3.33***	−0.24	0.05	−4.91***
Transition weekend Monday 1 (Montrans 1)	−0.31	0.08	−3.71***	0.21	0.09	2.30*
Workweek 1 slope	−0.03	0.04	−0.75	0.03	0.04	0.81
Transition Friday weekend	0.26	0.08	3.07**	−0.19	0.08	−2.28*
Weekend 2 slope	0.08	0.04	1.86†	−0.10	0.04	−2.49*
Transition weekend Monday 2	−0.19	0.10	−1.93†	0.22	0.10	2.28*
Workweek 2 slope	0.05	0.13	0.39	−0.14	0.13	−1.06
Cross-level interactions						
Detachment (intercept) × WE1	0.01	0.05	0.11	0.00	0.05	0.04
Detachment (slope) × WE1	0.05	0.10	0.50	−0.01	0.11	−0.06
Relaxation (intercept) × WE1	−0.02	0.06	−0.41	0.06	0.06	0.99
Relaxation (slope) × WE1	−0.04	0.14	−0.31	0.16	0.15	1.07
Control (intercept) × WE1	−0.08	0.08	−1.06	0.06	0.09	0.75
Control (slope) × WE1	−0.08	0.15	−0.51	−0.12	0.17	−0.73
Mastery (intercept) × WE1	0.02	0.05	0.54	−0.09	0.05	−1.74†
Mastery (slope) × WE1	0.07	0.07	0.94	−0.07	0.08	−0.80
Sleep impariment (intercept) × WE1	−0.09	0.08	−1.15	−0.02	0.09	−0.18
Sleep impariment (slope) × WE1	−0.33	0.13	−2.64**	0.28	0.14	2.00*
Positive anticipation (Monday) × Montrans1	0.12	0.06	2.09*	−0.12	0.07	−1.78†
Workweek 1 effort x workweek 1 slope	0.02	0.03	0.52	0.03	0.03	0.91
Variance components						
Level 3 (between individuals)						
Level 3 intercept variance	0.08			0.16		
Weekend 1 slope (WE1) variance	0.01			0.01		
Transition weekend Monday 1 variance	0.00			0.10		
Workweek 1 slope variance	0.03			0.02		
Level 2 (between days)						
Level 2 intercept variance	0.16			0.14		
Level 1 residual variance	0.59			0.62		
Deviance (*df*)	5,673.310		(38)	5,792.820		(38)

TABLE 2 (Continued)

	Vitality			Fatigue		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*
AIC	5,749.310			5,868.820		
BIC	5,965.420			6,084.930		

Note. Deviance = (−2 Residual Log Likelihood). Sample size: 2180 observations in 966 days in 87 persons.
Abbreviations: AIC, Akaike information criterion; BIC, Bayesian information criterion; *df*, degrees of freedom; *SE*, standard error.
†$p < .10$.
*$p < .05$. **$p < .01$. ***$p < .001$.

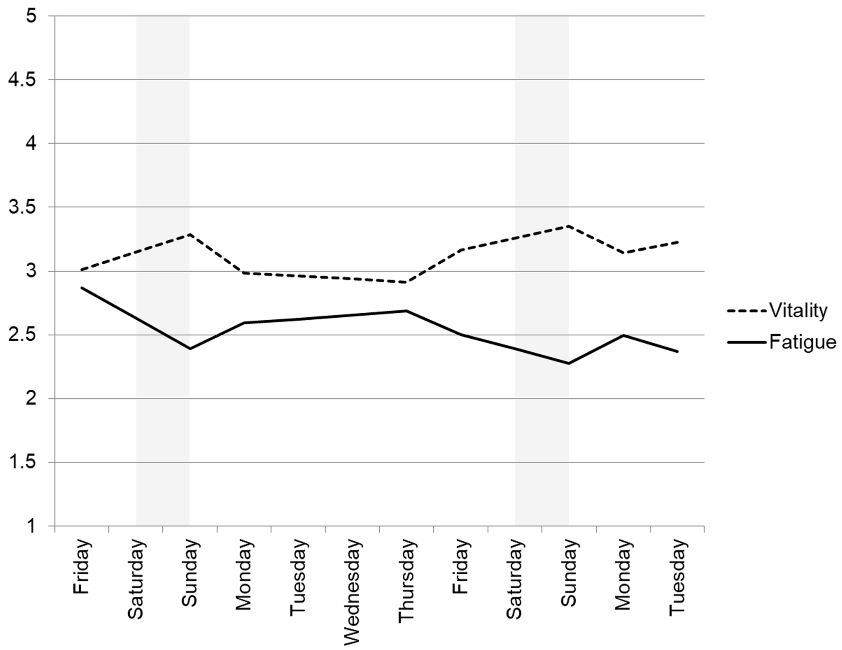

FIGURE 2 Trajectories of human energy as reflected in vitality (dashed line) and fatigue (continuous line) over the course of the week. Grey background refers to the period of a prototypical weekend

recovery experiences and sleep quality from Thursday night to Saturday night, applying a set of linear growth curve models. Time was scaled in days since Thursday (0, 1, 2). We set the slope of time to random to allow for person-specific trajectories. The results of these analyses are presented in Table S6. Detachment, relaxation, and control followed a linear increase from Thursday to Saturday. We found no change in mastery experiences. Sleep impairment followed a linear decrease from Thursday night to Saturday night. We found no evidence for quadratic slopes. In sum, except for mastery experiences, all recovery experiences and sleep quality improved during the three evenings or nights. We extracted the individual level intercepts (starting level on Thursday night) and slopes (rate of change from Thursday night to Saturday night). In a second step, we predicted vitality and fatigue, applying discontinuous growth curve models as described in the last section. We entered the individual intercepts and slopes (grand-mean centered) as (Level 3) covariates and cross-level moderators of the weekend-recovery slope (Level 2) predicting changes in energy. Neither intercepts nor slopes of any measured recovery experience predicted changes in vitality over the course of the weekend ($-0.05 < \gamma < 0.07$, $|t| < 1.02$, $p > .308$). A similar pattern emerged for the cross-level interactions predicting changes in fatigue: the strongest coefficient emerged for the intercept of mastery experiences predicting decreases in fatigue over the weekend. However, the coefficient was not statistically significant at conventional levels ($\gamma = -0.09$, $SE = 0.05$, $t = -1.74$, $p = .082$) and should be interpreted with caution. Hypothesis 4 was not supported.

Besides recovery experiences from the recovery experience questionnaire, we also considered the role of sleep quality and found that changes in sleep quality from Thursday night to Saturday night predict changes in vitality ($\gamma = -0.33$, $SE = 0.13$, $t = -2.64$, $p = .008$) and fatigue ($\gamma = 0.28$, $SE = 0.14$, $t = 2.00$, $p = .046$) from Friday to Sunday. More specifically, increases in sleep quality (as reflected in decreases in sleep impairment) from Thursday night to Saturday night were associated with increases in vitality and decreases in fatigue from Friday to Sunday. These findings consistently support Hypothesis 5.

3.4 | Effort and changes in energy during the workweek

We examined whether the level of effort exerted over the course of the workweek is associated with changes in energy. We found that workweek effort (person-mean from Monday to Thursday, grand-mean centered) did not explain variance in the workweek slopes of vitality (γ = 0.02, SE = 0.03, t = 0.52, p = .604) and fatigue (γ = 0.03, SE = 0.03, t = 0.91, p = .362). We did not find support for Hypothesis 6 as the level of effort aggregated across the workweek does not predict changes in energy over the course of the workweek.

3.5 | Positive anticipation and changes at the transition to the workweek

Finally, we also examined whether positive anticipation accounts for the strength of the drop in energy at the transition from Sunday to Monday. We followed a similar approach as for studying the role of effort. More specifically, we focused on the cross-level interaction of positive anticipation of work on Monday (Level 3) and the Sunday–Monday transition effect (Level 2). In line with Hypothesis 7a, we found that positive anticipation attenuates the drop in vitality (γ = 0.12, SE = 0.06, t = 2.09, p = .037). However, positive anticipation of work on Monday does not predict the strength of the increase in fatigue (γ = −0.12, SE = 0.07, t = −1.78, p = .076) from Sunday to Monday, although the results tend to be consistent with the buffering effect found for vitality.

3.6 | Additional analyses

In our focal analyses, we considered covariates of the recovery slope for Weekend 1, although trajectories of energy were considered for two consecutive weekends. We applied this strategy to prevent further shrinkage of sample sizes. However, we ran additional models, including interactions of gains in sleep quality (Level 3) × gains in energy (Level 2) for both weekends within the same model. The results are presented in Table S3. Increases in sleep quality during the second weekend failed to reach significance for vitality (γ = 0.14, SE = 0.09, t = 1.56, p = .119), when sleep quality for weekends 1 and 2 was considered concurrently within the same model. Increases in sleep quality during the first weekend failed to reach significance for fatigue (γ = 0.19, SE = 0.14, t = 1.34, p = .178). Although not perfectly consistent across Weekends 1 and 2, this finding suggests that the beneficial effects of increases in sleep quality reflect a recurring pattern.

Given that sleep quality was the most important predictor of changes in energy, we also considered whether sleep quality from Sunday to Monday predicts the drop in energy at the transition from the weekend to the workweek. For instance, scholars have argued that sleep quality may suffer, particularly on Sunday night when employees anticipate the next workweek (Rook & Zijlstra, 2006). Hence, we added Sunday night sleep quality as an additional cross-level moderator of the Sunday–Monday transition slope to Models 1 and 2. The results are presented in Table S4. We found no significant interaction effect for predicting changes in vitality (γ = −0.11, SE = 0.07, t = −1.48, p = .139), but a significant transition × sleep impairment interaction for fatigue (γ = 0.23, SE = 0.08, t = 2.76, p = .006). High sleep quality on Sunday night alleviates an increase in fatigue from Sunday to Monday. The focal pattern of results did not change considerably. Although positive anticipation of work modulates decreases in vitality at the transition between the weekend and the workweek, sleep quality affected the rate of change in fatigue.

The nonsignificant effects for all facets of the recovery experience questionnaire led us to inspect the day-level associations. For this additional analysis, we departed from our growth modeling approach and followed the analytic strategy of most diary studies to facilitate comparisons to prior day-level research. We specified three-level models and entered the person-mean centered values of psychological detachment, relaxation, control, and mastery experiences at Level 2 to predict day-level vitality and fatigue. The results are presented in Table S5. We found that all recovery experiences were positively linked to day-level vitality and negatively linked to day-level fatigue when entered as single predictors. When combining the four recovery experiences in one model, only relaxation and mastery experiences yielded unique positive significant associations to vitality. Except for control, all facets of recovery experiences uniquely predicted lower levels of day-level fatigue. The analyses are in line with standard procedures in day-level recovery research and provide results consistent with results from day-level diary research. These findings suggest that although recovery experiences are drivers of day-level fluctuation in energy, there seems to be no effect on changes in energy from Friday to Sunday. In another set of analyses, we ran all models accounting for diurnal cycles in energy. We included additional covariates like having nonprototypical work schedules. Finally, we excluded the focal predictors to reproduce the trajectories leveraging the initial sample. In short, these analyses suggest that the focal results are robust. More details on the additional analyses are presented in Supporting Information.

4 | DISCUSSION

In this study, we set out to combine ideas from day-of-week research implying discontinuous changes, particularly at the transition between weekends and workweeks, with resource models of recovery implying continuous changes across days. Beyond studying trajectories of human energy, we set out to scrutinize a set of variables likely to account for these changes in energy over time. Our study provides insights into the general patterns of increase and decrease in human energy over the course of the 7-day week, applying a rich longitudinal design and rigorous methods. In contrast to prior research, our study design allowed us to test more specific predictions regarding, for instance, changes in energy during the weekend and the "Thank God it's Friday" effect (Stone et al., 2012). Although prior research has studied vitality and fatigue largely in isolation (e.g., Rook & Zijlstra, 2006; Ryan et al., 2010), we leveraged human energy as an umbrella to support the integration of research on two prototypical aspects of human energy.

First, there are considerable gains in energy acquired over the course of the weekend. Our study is the first to provide evidence for linear day to day increases in energy from Friday to Sunday. This pattern is in line with resource models of recovery from work (Meijman & Mulder, 1998) but challenges the view of mere workweek-weekend contrasts in vitality inherent in day-of-week research (Ryan et al., 2010): energy is restored continuously over the course of the weekend. The pattern of linear increases from day to day is consistent with findings from vacation research that there are considerable gains in well-being within the first days off the job (de Bloom et al., 2013). In this sense, we contribute to weekend recovery research and day-of-week research alike by providing a more accurate description of what happens (rather than what is) over the course of the weekend (Roe, 2008).

Second, we found that the gains in energy during the weekend will be drained already on Monday. We extend prior research that has focused on overall contrasts between well-being during the weekend versus the workweek (Ryan et al., 2010). Our study provides a rigorous test of whether levels of energy change slowly over several days or discontinuously from Sunday to Monday. We found that the transition between weekends and workweeks is associated with significant drops in energy. These findings supplement resource models of recovery, implying slow change. Obviously, the transition is associated with psychological costs that have not been discussed explicitly in prior weekend recovery research (Fritz et al., 2010; Ragsdale et al., 2011; Ragsdale & Beehr, 2016). Our results contribute to clarify the patterns of ups and downs in human energy from Friday to Monday and extend weekend recovery research applying pre-post weekend comparisons of levels in energy. Again, our results resemble the patterns of increases during and decreases at the end of vacations (de Bloom et al., 2013). The trajectories we found suggest that assessments of energy on Monday may underestimate the actual gains in energy during the weekend (Mitchell & James, 2001). In this sense, our study informs theory building and choice of time lags in weekend recovery studies (Dormann & Griffin, 2015). Our results also provide some insights about the "Blue Monday" effect. Consistent with cross-sectional research (Stone et al., 2012) we did not find that energy differs significantly between Monday versus the other workweek days. However, the contrast in energy at the transition between weekends and workweeks may contribute to subjectively experience Monday as the worst day of the week.

Third, we found that energy does not decrease continuously over the course of the workweek. Hence, on average, energy may fluctuate from day to day but follows a flat passageway trajectory over time (Halbesleben et al., 2014). There is no evidence for an accumulation of strain over the workweek. This result is in line with the basic tenet of the effort-recovery model (Meijman & Mulder, 1998) that strain effects will accumulate only if employees lack opportunities for recovery—namely in the evenings during the workweek. On a related note, decreases in energy may take more time to occur. For instance, research on fade-out effects after vacations provides evidence that well-being decreases over longer periods of a couple of weeks (Kühnel & Sonnentag, 2011) and that recovery during weekends may alleviate or cancel out sustainable decreases in well-being over periods of weeks and months (Syrek et al., 2018).

Fourth, our results suggest that energy is boosted at the transition between Thursday and Friday. Our study is the first to provide evidence for the "Thank God it's Friday" effect applying a within-persons design (see Stone et al., 2012). This finding is also consistent with the Friday-dip in stress-related content of Twitter messages (Wang et al., 2016). The change from Thursday to Friday challenges the continuous perspective inherent in resource models (energy decreases from Monday to Friday, see above) and highlights that the weekend may affect levels of energy before it has even started by means of positive anticipation (Sonnentag, Mojza, et al., 2008; Syrek et al., 2018). We provide arguments that resource theories of strain and recovery would benefit from integrating transitions explicitly (Bliese et al., 2017).

Fifth, we examined the role of psychological detachment, relaxation, control, mastery experiences, and sleep quality in explaining recovery in terms of linear increases in energy over the course of the weekend. More specifically, we provide a rigorous test of whether changes in recovery experiences and sleep quality predict actual changes in energy. We found that increases in sleep quality from Thursday night to Saturday night predicted increases in vitality and fatigue from Friday to Sunday. By contrast, changes in recovery experiences over the course of the weekend were not predictive of changes in energy. This pattern of results underscores the pivotal role of sleep in accounting for the recuperative value attributed to weekends and provides strong evidence that sleep quality is a major driver of weekend recovery (Crain et al., 2018). Furthermore, our results extend prior research on weekend recovery experiences. Whereas prior research has focused on predicting changes in energy by the overall *level* of recovery experiences during the weekend, yielding inconsistent effects (Fritz et al., 2010; Ragsdale et al., 2011; Ragsdale & Beehr, 2016), our results extend this perspective and suggest that the beneficial effects of the weekend regarding energy do not depend on higher levels or increases in psychological detachment, relaxation, control, and mastery experiences during the weekend (as compared with typical workdays). The pattern of results also emerges when sleep quality is omitted from the focal models and when recovery experiences are examined as single predictors. Our results imply that the unique contribution of weekends to recovery is to provide an opportunity for increasing sleep quality.

Sixth, we have scrutinized the role of positive anticipation of work in accounting for the shifts in energy from Sunday to Monday. Expectations regarding the first day of the workweek attenuate the pattern of change at the transition. Levels of vitality do not drop as much if employees look forward to the challenges and are eager to tackle the tasks ahead of them on Monday. Although results tended to be consistent for the two indicators of energy, we only found significant evidence regarding vitality. This differentiated pattern suggests that positive anticipation is more relevant for changes in vitality than for changes in fatigue at the transition from weekends to workweeks. Our finding highlights that positive expectations regarding the work ahead are particularly relevant at the transition from weekends to workweeks. This result is consistent with the (so far untested) assumption in day-of-week research that expectations regarding the workweek are drivers of the "Blue Monday" effect (Areni, 2008). In addition, our supplemental analyses imply that sleep quality on Sunday night alleviates the increase in fatigue at the weekend–workweek transition. This finding suggests that although vitality and fatigue yield almost perfectly converse patterns, there are some differential effects, which warrant distinguishing the two concepts. Although vitality and fatigue share a considerable portion of variance, they refer to distinct aspects of human energy partly driven by different variables.

Finally, taking examination of the effort-recovery model (Meijman & Mulder, 1998) a step further, we considered the role of effort during the workweek predicting accumulation of strain in terms of linear decreases in energy over the course of the weekend. We found that the average level of effort during the workweek does not account for changes in energy. One reason may be that effort can be considered a behavior at the discretion of the individual. So it is likely that employees apply adaptive strategies of self-regulation, not to invest more effort than their current level of energy permits (Quinn et al., 2012). Another reason may be that high levels of effort may even be a source of energy if effort results in success or goal progress over time (Amabile & Kramer, 2011; Quinn et al., 2012).

4.1 | Practical implications

Our results underscore the pivotal role of the 2-day weekend as a major opportunity for a respite (Fritz et al., 2010). However, the linear increase in sleep quality may also reflect that schedules during the workweek are misaligned with biological preferences for sleeping times (i.e., social sleep lag, Kühnel et al., 2016). Hence, employees and employers may strive to improve fit between individual chronotype and work schedules during the workweek to enhance sleep quality throughout the whole week, so less recovery is needed. Furthermore, we found that positive anticipation of work contributes to carryover effects of high levels of human energy from the weekend to the start of the workweek. Hence, making employees aware of the potential for growth and learning inherent in the tasks ahead may facilitate the start of the workweek. At the individual level, interventions might aim for creating opportunities for positive work reflection in leisure time (Bono et al., 2013; Casper et al., 2018), a factor that contributes to recovery during the weekend in its own right (Fritz & Sonnentag, 2005). At the organizational level, aspects of transformational leadership contribute to experience work as self-concordant (Bono & Judge, 2003) and might be relevant for positive anticipation of work as well. Our finding that there is a boost in energy from Thursday to Friday could be considered by leaders, teams, and organizations upon scheduling tasks over the course of the workweek. It might be that certain work routines associated with days of the week like working only until noon on Fridays are drivers of the "Thank God it's Friday" effect. Organizations might support employees in better aligning their schedules with their actual preference (Demerouti et al., 2015) to make most workdays feel like Friday.

4.2 | Strengths and limitations

Our study features strengths, such as applying an intensified longitudinal design, leveraging rigorous methods of analysis to a rich data set, and acquiring considerable sample sizes at all levels of analysis. Our multiple outcome approach supports further bridging research on vitality and fatigue. However, several limitations warrant future research.

First, the use of self-reports renders concerns about common-method variance relevant (Podsakoff et al., 2012). However, it is rather unlikely that the pattern of results (trajectories over time rather than levels as well as interaction effects rather than bivariate associations of variables) is purely the product of common-method variance (Siemsen et al., 2010). Still, social desirability may have biased self-reports and altered the focal pattern of results.

Second, although our analyses of changes in sleep quality predicting changes in energy over time are among the most rigorous tests of causal effects in field research, we are hesitant to make a strong case for causal effects. Our study provides a strong hint that sleep quality is one source of gains in energy from day to day over the course of the weekend (change predicts change). However, further scrutiny of the lagged effects of sleep quality over the course of the weekend is warranted.

Third, due to our intensified longitudinal design covering up to 32 short surveys within 12 days, we have a considerable portion of missing data. Particularly probing the interaction effects of Monday morning positive anticipation of work relied on participants providing this information. Our supplemental analyses provide evidence that at least the pattern of continuous and discontinuous trajectories holds for the initial sample (with missing values on Level 3 variables). The number of self-reports per day did not predict levels of energy at the day level. Controlling for the number of missing self-reports per day did not change the focal conclusions. Participant provided more than 20 self-reports on average. Hence, results seem to be robust despite a nonnegligible percentage of missing data.

Fourth, we have studied a sample of employees enrolled in a psychology program next to their regular jobs. Although our sample is heterogeneous in terms of age, industry, and profession, the individuals studied share a common level of education and an interest in psychology. Therefore, our results may not generalize to other populations. On a related note, the weekends of typical part-time students may differ from those of nonstudents, and we cannot rule out that study activity during the weekend might have affected energy. Moreover, our sample size in terms of persons surveyed in total is rather small. Hence, studying the generalizability of our findings across contexts in future research is warranted.

Fifth, we had to confine to a limited set of variables to keep survey length manageable and prevent higher dropout rates. On the one hand, we cannot account for additional variables that may be relevant for energy over the course of the week. On the other hand, our focus allowed for a rigorous test of all predictions within one model for each outcome variable. Given that our study is the first to address trajectories of recovery over the course of the weekend, we believe that we still provide a significant step forward beyond prior research.

4.3 | Future research

Given that the recovery experiences studied did not predict gains in energy, future research may consider the role of experiences beyond the recovery experience questionnaire, such as relatedness (D. B. Newman et al., 2014), sense of purpose or pleasure, and stimulation (Sheldon et al., 2001; van Hooff & de Pater, 2017)—experiences likely to happen particularly during the weekend as opposed to the workweek. The consequences of studying during off-job time deserve further attention and scrutiny, too. We found support for the "Thank God it's Friday" effect (Stone et al., 2012), but the causes underlying this shift in energy are underexplored. Hence, future research on the specific drivers of changes in energy at the end of the workweek is warranted. In this study, our focus was on variables likely to vary from day to day, such as recovery experiences, sleep quality, positive anticipation of work, and effort. However, individual differences, habits, or work routines also play an important role in forming and modifying the patterns of up and down in energy within the 7-day circle. Although Larsen and Kasimatis (1990) have examined the interplay of big five personality traits and recurring patterns of changes in affective well-being over time among students three decades ago, at present, we have only limited knowledge on the role of more specific dispositions such as stress mindset (Casper et al., 2017) or chronotype (Kühnel et al., 2016). Furthermore, an implicit assumption inherent in the "Blue Monday" effect is that transitions from weekends to workweeks do not only affect employee well-being but may also predict trajectories of performance as reflected in proactive work behavior (Parker & Collins, 2010) or counterproductive work behavior (Marcus et al., 2016). In conclusion, we hope our study contributes to inspire further discussion on how we can combine continuous resource model perspectives and day-of-week perspectives emphasizing transitions to gain a better understanding of cycles in human energy over time. Our study suggests that weekly patterns of human energy can be best described as continuity in transition.

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ENDNOTES

[1] The procedure and materials of this study have not undergone examination by an ethics committee, as the measures and procedures of our study followed the protocols of standard experience sampling research in applied psychology, and we did not touch sensitive topics (like, e.g., sexual orientation). Our protocol fully complied with the standards of the Department of Psychology at FernUniversität in Hagen, which include strict guidelines to store potentially identifying information like email addresses separately from the focal measures. We informed about the general aims and the protocol of the study before participation. Participation was voluntary, and participants were free to quit whenever they wanted.

[2] Throughout the manuscript, we equate Monday and first day of the workweek for purposes of clarity. In a similar vein, Friday is considered the last workday of the week. However, the pattern of workdays and free days did not perfectly fit this Monday–Friday workweek and Saturday–Sunday weekend pattern for all participants. Rather than excluding participants not conforming to the standard pattern, we inspected patterns of work and leisure days and manually coded time variables to align time trajectories with actual start of the workweek, last day of the workweek, etc. For instance, if a person worked from Monday to Saturday, the weekend recovery slope started on Saturday rather than Friday. If the person started work on Tuesday rather than Monday, the transition occurred between Monday and Tuesday rather than Sunday and Monday. In this sense, referring to Monday, Friday etc. is not perfectly accurate, but reflects the meaning to participants as points of transition between weekends and workweeks. We also accounted for free days within the workweek by pausing the time trajectory on free days (free Wednesday: 0 1 1 2). We believe that applying this strategy is warranted as it is in line with our perspective of transitions (rather than day of the week) and as it allows scooping the full sample size. We believe that the manual coding of time strategy is superior to throwing away large proportions of the sample which provide valid information.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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