

ARTICLES

It's the Little Things That Matter: An Examination of Knowledge Workers' Energy Management

by Charlotte Fritz, Chak Fu Lam, and Gretchen M. Spreitzer

Executive Overview

Recently, Pfeffer (2010) called for a better understanding of the human dimension of sustainability. Responding to this call, we explore how individuals sustain an important human resource—their own energy—at work. Specifically, we focus on strategies that employees use at work to sustain their energy. Our findings show that the most commonly used strategies (e.g., switching to another task or browsing the Internet) are not associated with higher levels of human energy at work. Rather, strategies related to learning, to the meaning of one's work, and to positive workplace relationships were most strongly related to employees' energy.

Over the past 20 years, we have seen dramatic public and business interest in building sustainable organizations, that is, organizations that have the capacity to endure and be productive over time. Yet, in a recent *Academy of Management Perspectives* article, Pfeffer (2010) argued that substantially less research attention has focused on the human dimension of sustainability compared with environmental and economic dimensions of sustainability. An important human dimension of sustainability is energy (Brown, 1999). Like a battery, human energy can be depleted over the course of the day (Hobfoll, 1989; Hobfoll & Shirom, 2001). In this paper, we bring the idea of human sustainability front and center by examining strategies that individuals use at work to manage and sustain their energy throughout the workday. We will shine a light on an everyday phenomenon in the workplace that, as our results indicate, may have important implications for work organizations.

Human energy is an affective experience that includes a sense of positive arousal, eagerness to

act, and the capability to act (Quinn & Dutton, 2005). It is a “reinforcing experience that people enjoy and seek” (Dutton, 2003, p. 6) and that is reflected in an individual's experience of vitality and lack of fatigue (Thayer, Newman, & McClain, 1994). Vitality (Ryan & Frederick, 1997) refers to having significant energetic resources and is manifested in feeling enthusiastic and alive. An employee high in subjective vitality feels alert, energized, and spirited (Bostic, Rubio, & Hood, 2000; Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005). An employee high in subjective fatigue feels depleted, tired, and sluggish (McNair, Lorr, & Droppleman, 1992; Watson & Clark, 1994). Thus, within the work context, human energy is a “fuel” that helps organizations run successfully. Therefore, it is an important but limited resource that can be replenished and that fosters high performance in employees and organizations (Dutton, 2003).

We begin by highlighting a variety of forces that drain employee energy at alarming rates. We then review the literature to better understand

* **Charlotte Fritz** (fritzcp@pdx.edu) is an Assistant Professor of Industrial and Organizational Psychology at Portland State University. **Chak Fu Lam** (chakfu@umich.edu) is a doctoral candidate of Management and Organization at the University of Michigan. **Gretchen M. Spreitzer** (spreitze@umich.edu) is a Professor of Management and Organization at the University of Michigan.

psychological processes related to employee energy management. Next, we turn to our study of micro-breaks and work-related strategies employees can use to manage their energy at work. Using a sample of more than 200 knowledge workers, we show that the most frequently used strategies are not necessarily the strategies most potent for human sustainability. In other words, the strategies most employees use to give them energy don't actually work. By examining what sustains human energy at work, we heed Pfeffer's (2010) call for a more targeted focus on the human dimension of sustainability. Our results provide research evidence for the importance of studying human sustainability in the workplace.

Forces Draining Human Energy at Work

In modern corporate America, many employees can relate to the following:

I've habitually spent my days immersed in projects, poring over details and running from one engagement to another without a break—and it's suffocating. I've even gone so far as to hold my urge to use the bathroom all day so I could make one more phone call, one more meeting, or one more something (William, 2006).

There are many factors that contribute to the depletion of human energy at work. Popular books even call the depletion of human energy at work the *human energy crisis* (Loehr & Schwartz, 2003). The human energy crisis often gets worse during recessionary times, when workloads increase due to layoffs and more people are employed in service-sector jobs requiring more emotional labor, which also depletes human energy reserves (Pugh, 2001).

A number of factors have reduced opportunities that normally help employees recover their energy. First, long work hours preclude having time to unwind from work. For example, as A.G. Lafley, ex-CEO of Procter & Gamble (Fortune, 2006), recounted:

I'd be up in the morning between 5 and 5:30. I'd work out and be at my desk by 6:30 or 7, drive hard until about 7 p.m., then go home, take a break with my wife, Margaret, and be back at it later that evening. I was just grinding through the day. During my first year in this job, I worked every Saturday and every Sunday morning.

Second, more employees are electronically "tethered" to work via Blackberry or smartphone and are obliged to respond to calls and e-mails outside of normal work hours. Because employees have a hard time "unplugging," their energy reserves are being depleted with little chance to recover before the next message or call needs answering.

Third, in today's difficult financial times, organizations, fighting for financial survival, are less able to afford perks such as fitness facilities, additional vacation days, free food, or retreats that may reenergize employees. Furthermore, heightened job insecurity and work furloughs can induce a sense of uncertainty that makes employees less inclined to take time off for recovery (Ashford, Lee, & Bobko, 1989; Schor, 1992; Storseth, 2007). Resulting worries can contribute to sleep disruption, leading to sleep deprivation and higher levels of fatigue during the workday (Scott & Judge, 2006; Sonnentag, Binnewies, & Mojza, 2008). Finally, jobs have become more and more interdependent (Griffin, Neal, & Parker, 2007), increasing the need for interpersonal interaction and coordination. However, interaction and coordination require effort, and interactions can be negative and thus drain human energy.

Even factors beyond one's immediate work environment can deplete human energy available for work. As more workers are part of dual-career marriages (Byron, 2005) and the number of single parents is growing (Census Bureau, 2007), employees are less likely to have a partner taking care of home life full time. Thus, employees have less time for recovery during leisure time as they embrace a "second shift" (Hochschild, 1990) of housework and childcare when they finish their workday.

Given that so many factors can deplete human energy at work, a key question becomes how employees can generate more vitality and reduce fatigue *at work*. We first review the literature on recovery from work demands in order to learn more about how people restore their energy during non-work time. We then turn our focus to a less understood but important question: Given that there are fewer opportunities for recovery outside of work, how can people maintain their energy at work and in the doing of work?

What Does the Literature on Recovery Processes Outside of Work Tell Us About the Management of Human Energy?

Employees often need to complete a variety of tasks during the workday. The fulfillment of most of these tasks requires human energy and effort. Thus, employees need energy not only to accomplish their everyday work tasks but also to go above and beyond what they are asked to do. Human energy can be seen as a resource (Hobfoll, 1989, 1998) that helps people regulate their behaviors and emotions in compliance with organizational or group norms and expectations. However, this energetic resource is limited and can be depleted over time due to work demands. Thus, employees need to find ways to replenish their energy on a regular basis.

Accordingly, research on recovery (i.e., unwinding from work demands) has found that employees can use their time *off* work, such as evenings (Sonnentag et al., 2008) or weekends (Fritz & Sonnentag, 2005), to recharge their energy and reduce their fatigue. For example, Fritz and colleagues (2010) found that recovery experiences during the weekend were positively related to joviality—an experience similar to human energy—as well as to lower levels of fatigue at the end of the weekend. Further, Sonnentag et al. (2008) found that positive unwinding experiences during workday evenings are associated with higher levels of human energy during the following workday. Finally, a study by Sonnentag (2003) indicated that recovering from work stress during the evening was associated with higher levels of work engagement and proactive behavior the following workday. Thus, research on recovery from work demands has pointed to one mechanism by which employees can sustain their energy and performance capacity over time.

Further, research suggests that the kinds of experiences one has during non-work time matter to the restoration of human energy as well. Specifically, experiences such as relaxation, mastery experiences, a sense of control, and psychological detachment from work have been found to be particularly beneficial for recovery (Fritz & Sonnentag, 2005; Fritz et al., 2010; Sonnentag &

Fritz, 2007). In addition, sleep is an important factor in replenishing human energy. Accordingly, results from day-level studies indicate that employees experiencing high-quality sleep at night reported higher levels of energy the next day (Scott & Judge, 2006; Sonnentag et al., 2008).

Despite the significant progress recovery scholars have made in understanding what replenishes human energy during off-work time, research indicates that the beneficial effects of recovery activities fade over time. For example, vitality is sapped by the end of the workweek (Fritz et al., 2010) or at the end of the workday (Lin & Fritz, 2011). This directly speaks to Pfeffer's (2010) concerns regarding organizations' lack of understanding of human sustainability: If employees cannot sustain their energy over longer periods of time, organizations cannot expect them to achieve consistently high-level performance. Thus, in this paper, we turn our attention to how recovery can take place *at* work (during micro-breaks or in the doing of work).

What Does the Literature on Breaks at Work Tell Us About the Management of Human Energy?

For the most part, research on breaks at work has focused on formal, structured breaks, often taking an ergonomic or health perspective (Dababneh, Swanson, & Shell, 2001; Taylor, 2005; Tucker, Folkard, & Macdonald, 2003; Van Dieen & Oude Vrielink, 1998). While smoking and coffee breaks at work were found to be detrimental to health, rest breaks and physical activity during breaks were found to be beneficial. Longer or more frequent rest breaks led to fewer strain reactions, injuries, and job-related accidents. For example, frequent 10-minute breaks that included simple flexibility and strength exercise routines decreased fatigue, anger, and depression and increased mood (Pronk, Crouse, & Rohack, 1995). In a study of cheerleading instructors, Trougakos and colleagues (2008) examined the impact of specific respite break activities (including socializing, napping, and relaxing) and chore breaks (working with clients, running errands, and preparing for upcoming sessions) on customer service performance, and found that respite breaks aided recovery and performance while chore breaks did not.

More recently, Trougakos and Hideg (2009) pointed to the importance of “momentary recovery” at work or taking micro-breaks “in the moment” as needed. This might be experienced as taking a moment of mindlessness after finishing one task and before addressing the next task (Elsbach & Hargadon, 2006). Yet to date, the literature on these kinds of breaks has not explicitly addressed their role in the management of human energy. In this paper, we examine the effects of micro-breaks, but also look at strategies that employees use during the workday and their impact on experienced vitality and fatigue.

An Examination of Strategies Employees Use at Work to Increase Their Energy

The goal of this study was to explore a variety of micro-breaks and work-related strategies that employees use explicitly to manage their energy at work. Adapting from Loehr and Schwartz’s (2003) categorization, we examined strategies concordant with four themes of tactics related to the sustenance of human energy at work: (1) physical, (2) relational¹, (3) mental, and (4) spiritual. Physical strategies usually take the form of a break to fulfill basic physiological needs such as drinking water, going to the bathroom, or engaging in any kind of physical activity. Relational strategies include interacting and connecting with people in a positive manner (e.g., showing gratitude to someone at work, offering help to someone). Mental strategies refer to focused, sometimes future-oriented behavior such as making a to-do list for work or making plans for the evening or the weekend. Finally, spiritual strategies are used to help see the “bigger picture” of things—for example, through thinking about the meaning of one’s work.

As noted above, some of these strategies are what we call “micro-breaks.” They are breaks in the sense that they aren’t directly related to the doing of work. Examples might include drinking water, taking a walk, smoking, checking personal

e-mails, making plans for the weekend, running an errand, or having a snack. Other strategies are employed while employees are doing their work. We refer to these as “work-related strategies” because they occur in the doing of work. Examples might include switching to another task, making a to-do list, or offering help to someone. In our study, we examine both types of strategies—micro-breaks and work-related strategies—employees report engaging in to manage their energy at work. Further, and even more important, we look at which strategies are actually related to increased subjective vitality and reduced fatigue at work. The complete list of strategies is provided in column 2 of Tables 1a and 1b.

Research Design

To examine the applicability of our survey items to a white-collar sample, we first conducted a pilot study with 20 employees from a global management consulting company. After receiving only minor feedback on our survey, we proceeded to our main sample, composed of employees working for a U.S. software development company. After agreeing to participate in the study, the organization’s human resources department sent e-mails to about 400 employees asking them to participate in the study. Both organizations were interested in learning about strategies for employees to regulate their energy at work. A \$5 gift card was provided to employees who completed the survey.

Sample

Study participants (N=214) worked across hierarchical levels in professional and clerical positions and thus included mostly knowledge workers. They were on average 45 years old, 53% were male, and 63% had a college degree. Participants had worked at the company an average of 11 years. Respondents indicated working 40.50 hours per week on average (SD=8.10) and came from a variety of departments, including quality, finance/accounting, human resources, general administration, information technology, sales/marketing, legal, and customer relations. About 81% of respondents were in supervisor positions of some kind. With regard to health-related variables, respondents slept on average 7.7 hours (SD=1.11)

¹ We altered this category label in the Loehr and Schwartz (2003) model from “emotional” to “relational” because our goal was to examine the importance of relationships in creating human energy at work. We further assumed that all four categories (physical, relational, mental, and spiritual) can be associated with positive emotional experiences, such as energy. Therefore, a category labeled “emotional” may have been confusing.

Table 1a
Work-Related Strategies

Rank	Strategy	Mean	Relationship With Subjective Vitality	Relationship With Fatigue
1	Check e-mail	3.68		
2	Switch to another task	3.52		
3	Make a to-do list	3.44		
4	Offer help to someone at work	3.24		
5	Talk to a co-worker/supervisor	3.23		
6	Learn something new	3.14	+	
7	Focus on what gives me joy at work	2.95	+	
8	Set a new goal	2.90	+	
9	Do something that will make a colleague happy	2.79	+	
10	Make time to show gratitude to someone I work with	2.70	+	
11	Check and update schedule	2.60		
12	Seek feedback	2.52	+	
13	Vent about a problem	2.50	-	+
14	Shut out interruptions	2.38		
15	Reflect on how I make a difference at work	2.34	+	
16	Get out of the office for a meeting	2.34		
17	Find ways to delegate	2.32		
18	Reflect on the meaning of my work	2.24	+	
19	Make a phone call	2.09		
20	Clean the office	1.98		

+/- indicates significant correlations with Cronbach's $\alpha < .05$.

per night, drank on average 3.04 cups of coffee per day ($SD=2.23$), and exercised 4.30 times ($SD=1.96$) per week.

Measures

We developed items to measure the variety of strategies individuals might use to manage their energy at work, including micro-breaks and work-related strategies described above. We also held a brainstorming session with a group of organizational scholars and doctoral students to identify additional strategies. Twenty items reflected work-related strategies, while 22 others reflected strategies employees could engage in at work but that were not directly work related (i.e., micro-breaks). We asked participants to rate the extent to which they used each of these behaviors “to manage their energy at work” on a scale ranging from 1 (not at all) to 5 (frequently). We also included an open-ended question asking for other strategies participants used that were not represented on the list.

We sought out two validated measures to capture positive and negative elements of human energy at work. Specifically, we assessed vitality at work using Ryan and Frederick's (1997) seven-item subjective vitality scale. Sample items include “I feel alive and vital at work” and “I have energy and spirit at work.” Cronbach's alpha was .90. We assessed fatigue—as an indicator of lack of human energy—with the seven-item subscale of the POMS (Profile of Mood States; McNair et al., 1981). Sample items include “worn out” and “exhausted.” Cronbach's alpha was .95.

Results

What strategies do people report using to manage their human energy at work?

We first examined the extent to which individuals reported using the different strategies (see the first three columns of Tables 1a and 1b) to manage their energy at work. While

Table 1b
Micro-Breaks

Rank	Strategy	Mean	Relationship With Subjective Vitality	Relationship With Fatigue
1	Drink water	3.54		
2	Have a snack	3.01		+
3	Go to the bathroom	2.92		+
4	Drink a caffeinated beverage	2.90	–	+
5	Do some form of physical activity, including walks or stretching	2.84		
6	Talk to someone about common interests (like sports or hobbies)	2.58	–	+
7	Check in with a friend or family member	2.53		
8	Listen to music	2.53	–	+
9	Surf the web	2.48	–	+
10	Show compassion to someone who needs help	2.44		
11	Go outside for some fresh air	2.37		
12	Check and send personal e-mails and text messages	2.20	–	+
13	Make plans for the evening or weekend	2.09	–	+
14	Look out the window	2.08		
15	Do an errand	1.93		
16	Read something for fun	1.87		
17	Daydream	1.78	–	+
18	Shop	1.48	–	+
19	Meditate	1.42	+	
20	Nap	1.17		
21	Write in my journal	1.15		
22	Smoke	1.08		+

+/- indicates significant correlations with Cronbach's $\alpha < .05$

these are behaviors that people often engage in at work, we specifically asked participants to report the extent to which they engaged in these strategies with the intent “to manage their energy at work.” The top five most common work-related strategies were (1) check e-mail, (2) switch tasks, (3) make a to-do list, (4) offer help to someone at work, and (5) talk to a co-worker or supervisor. Each of these strategies has a mean of over three on a five-point scale. In terms of non-work-related strategies, the five most common micro-breaks were (1) drink some water, (2) have a snack, (3) go to the bathroom, (4) drink a caffeinated beverage, and (5) do some form of physical activity including walks or stretching. These findings suggest that these strategies are often employed by individuals in our sample to manage human energy at work.

Are these strategies related to vitality and fatigue at work?

As described above, we chose vitality and fatigue to capture different aspects of human energy. We measured both because while they are moderately related to each other ($r = -0.52$), they clearly pick up some distinct aspects of energetic resources at work (one indicates an abundance of energy whereas the other indicates the lack of energy).

As shown in columns 4 and 5 of Table 1a, none of the top five most common work-related strategies was significantly related to vitality or fatigue. With regard to micro-break strategies, the data also indicated that none of the top three most common strategies was associated with vitality. However, one of the most common strategies, *drink a caffeinated beverage* (rank 4), was related to lower levels of vitality. Results for fatigue looked somewhat different. Specifically, fatigue was pos-

itively associated with three of the top five most common non-work strategies, namely *have a snack* (rank 2), *go to the bathroom* (rank 3), and *drink a caffeinated beverage* (rank 4). Thus, these strategies were more often used in the presence of higher levels of fatigue. It may be that employees seek out these strategies when they are already fatigued.

Overall, these results indicate that the most commonly reported strategies were generally not related to vitality, and contrary to popular belief, several of the most common micro-breaks were positively related to fatigue. In general, our findings suggest that people may not be employing the strategies most closely associated with human energy at work.

Which strategies are most related to vitality and fatigue at work?

The energy management strategies found to be most positively related to vitality were (in order of magnitude): (1) learn something new, (2) focus on what gives me joy in my work, (3) set a new goal, (4) do something that will make a colleague happy, (5) make time to show gratitude to someone I work with, (6) seek feedback, (7) reflect on how I make a difference at work, and (8) reflect on the meaning of my work. Interestingly, all of these strategies are work-related (not micro-breaks) and reflect notions of learning, relationships, and meaning at work. Only one work-related strategy was negatively related to subjective vitality: *vent about a problem*. In contrast, with the exception of venting about a problem, fatigue was not related to any work-related strategies. These findings suggest that specific work-related strategies are associated with higher levels of vitality but have no relationship with fatigue.

Interestingly, results for the micro-breaks looked quite different. Here several strategies were related to vitality. Specifically, subjective vitality was negatively related to eight of the micro-break strategies and positively to only one strategy: *meditate*. However, fatigue was related to 11 micro-break strategies, always in a positive way. Thus, micro-break strategies were mostly related to lower vitality and to higher levels of fatigue. These results indicate that individuals looking to effectively manage their energy at work would

do well to focus on work-related strategies rather than micro-breaks.

Discussion

Popular practice suggests that certain work strategies help employees replenish and sustain their energy over time. However, our findings indicate that the strategies employees report using most frequently to manage their energy are not significantly related to higher levels of vitality or lower levels of fatigue. Why would people use these strategies if they aren't effective? One possible explanation is that these strategies are used as a distraction when employees are fatigued and need a "time-out," indicating that energetic resource levels are already depleted. Thus, they may be a type of positive diversion (Iwasaki, 2003). For example, when employees are fatigued they choose activities such as surfing the Internet or having a snack, hoping to reduce fatigue and increase human energy.

With regard to work-related strategies two causal pathways may be at play: On one hand, employees experiencing high levels of energy decide to pursue activities such as showing gratitude or reflecting on the meaning of their work. On the other hand, employees experiencing low levels of energy may pursue those same experiences to increase their energy levels as a result. Given that we cannot discern causality in our analysis given our cross-sectional design, we cannot test this assertion, but the findings are suggestive.

We also found it interesting that other strategies often discussed in the popular press, such as napping, writing in a journal, and going outside for fresh air or being close to nature (Cable News Network, 2008; Kaplan, 2001) were related neither to vitality nor to fatigue. While these strategies may be discussed in the popular media, it's not clear whether they are the most effective ways to manage human energy at work. Instead, they may have more potent effects as sources of recovery during leisure time (e.g., during evenings or weekends). One exception was the meditation micro-break strategy, which was related to higher vitality.

On the other hand, the strategies we found to be most related to vitality are learning-oriented

(e.g., learning something new), relational (e.g., doing something that will make a colleague happy), and meaning-related (e.g., reflecting on how I might make a difference at work). Why might this be? In terms of learning, recent research on thriving at work shows a strong relationship between learning and vitality (Spreitzer et al., 2005). When people are learning, they are growing and developing, which in turn creates psychological resources. In addition, when people assume a learning orientation (VandeWalle, Brown, Cron, & Slocum, 1999) they become open to new things (rather than being resistant to change), which further increases vitality and vigor.

In terms of relationships at work, recent research (Dutton, 2003; Heaphy & Dutton, 2008; Quinn & Dutton, 2005) suggests that positive relationships at work are energizing, both physically and emotionally. Positive relationships at work create immediate and enduring consequences for an individual's cardiovascular, immune, and neuroendocrine systems. Thus, they are actually health-producing. In contrast, corrosive work relationships are like black holes that deplete psychological resources (Dutton, 2003). This lack of psychological resources or energy may then again affect the quality of interpersonal relationships. Thus, human energy and the quality of connections with others at work seem to be reciprocally related (Quinn, 2007).

In summary, high-quality relationships at work generate and sustain energetic resources, equipping people to do work and to do it well. Such energizing connections can be created in one-time interactions as well as in long-term relationships (Dutton, 2003). Accordingly, Shraga and Shirom (2009) found that warm interactions with others including one's supervisor were related to more vigor at work. Baker, Cross, and Wooten (2003) further found that individuals who were able to energize others showed higher job performance themselves.

Outside the work context, research by Caldwell (2005) and by Joudrey and Wallace (2009) indicates that leisure activities that involve friendship and social support are particularly therapeutic. Accordingly, findings in the context of weekend

experiences (Fritz & Sonnentag, 2005) indicate that spending time with people one likes is associated with higher levels of well-being, less disengagement, and higher task performance at the beginning of the following work week.

In terms of meaning, when people feel that their work matters somehow, they are more creative, satisfied, engaged, and committed to it (Cohen-Meitar, Carmeli, & Waldman, 2009; Pratt & Ashforth, 2003; Spreitzer, 1995, 1996). For example, recent research on job design (Grant, 2007) demonstrated that jobs are most motivating when individuals feel that their work has impact on others. In this vein, Grant, Campbell, Chen, Cottle, Lapedis, and Lee (2007) found that when individuals (firemen, dentists, fundraisers, lifeguards) could see the significance and meaning of their work to beneficiaries, they were more effective in their work. This finding is consistent with work by Caldwell (2005), who found that leisure activities that involve something personally meaningful are particularly therapeutic.

Accordingly, volunteering and similar activities that create meaning during leisure time were found to be associated with higher happiness and life satisfaction (Mojza, Lorenz, Sonnentag, & Binnewies, 2010; Thoits & Hewitt, 2001). Similar to our results, research by Spreitzer et al. (2005) suggests that resources created in the doing of work (such as positive meaning and positive relationships) are associated with higher levels of thriving, indicated through vitality and learning.

Thus, our findings suggest that strategies related to learning, meaning, and positive relationships help create positive experiences for oneself and those around one. This in turn may help employees and work groups regulate their behaviors and emotions in accordance with organizational rules and expectations.

Contributions, Limitations, and Future Directions

Recovery research suggests that how people spend their non-work time (e.g., evenings and weekends) can help them unwind and thus restore their energy. Furthermore, research on breaks suggests that breaks during the workday can also aid recovery. Our research extends this literature by focusing on what people do *at work* to sustain

vitality and reduce fatigue. Our study is a first step in exploring this new domain in more detail and in providing empirical evidence for its relevance for management and business. This is important as people spend more and more time at work and have less time for recovery outside of work.

Our work also offers specific insights into *how* people seek to manage their energy at work. The *Fortune* 100 Best Places to Work ranking suggests that perks such as off-site retreats, concierge services, and on-site massages, all of which are expensive and in short supply in these economic times, are energizing to employees. However, our results affirm the importance of the intrinsic factors in work motivation. Specifically, strategies focused on reflecting on how work is meaningful, what gives joy, and where one can make a difference were found to be related to employee vitality. Further, our findings demonstrate the importance of relational strategies such as showing gratitude, doing something to make someone at work happy, and offering help to others—something understated in prior work. Finally, strategies that give the opportunity to learn and grow seem to be relevant for human energy.

An additional contribution of our research is the focus on strategies that employees self-initiate to manage their energy. Prior research has mostly examined how leaders cultivate employee energy through building social capital (Carmeli, Ben-Hador, Waldman, & Rupp, 2009), increasing psychological safety (Kark & Carmeli, 2009), and developing better leader-member exchange relationships (Atwater & Carmeli, 2008). However, our results point to ways in which employees can “craft” their jobs to be more “energy-sustaining” over time. In this way, our research is more in tune with recent research on job crafting (Wrzesniewski & Dutton, 2001), which assumes a more agentic role for individuals in making decisions about how they do their work (even if they do not necessarily have choices over the content of their work). In addition, our findings add to research on affect regulation by indicating additional ways through which employees can regulate their own affect as well as that of those around them.

One limitation of our study is that we included only knowledge workers. Therefore, future re-

search should examine the management of human energy in a broader array of work contexts. Knowledge workers typically have more autonomy in how and when they do their work. Some micro-breaks like “surfing the web” or “reading for fun” may not be feasible for those working on an assembly line or in front-line service work. However, the most potent strategies we identified in our study are likely to be possible in almost any kind of job situation. In jobs with low autonomy, organizations may benefit from designing jobs in which employees still have the opportunity to learn, find meaning, and create positive relationships. For example, continuous learning programs create opportunities for employees in all kinds of jobs to learn new things. Membership in affinity groups can create opportunities for meaning and relationships even outside one’s immediate job.

Future research should also explore the role of possible “restrictions” in how employees manage their energy at work. For instance, the most relevant strategies may not be seen as appropriate or in accordance with organizational culture. Specifically, it might go against the organization’s norms for an individual to seek feedback from others or to show gratitude to a colleague explicitly. However, other strategies may be less visible (“reflect on how I make a difference at work” or “find joy in what I do”) and thus can be conducted in the privacy of one’s office or thoughts. Thus, norms and rules may be boundary conditions that enhance or limit the use of certain strategies.

Future research should also examine the existence of different dimensions of human energy (e.g., emotional energy versus physiological energy) and their relevance in the work context. While emotional energy can be assessed through a survey instrument, the best way to capture physiological energy would be through indicators such as glucose levels. The next step then would be to examine whether certain strategies are most potent for different dimensions of energy. For example, going for a walk may be more strongly related to physiological energy, while chatting with a co-worker may be more relevant for emotional energy. A related issue is understanding the dispositional nature of human energy. We have focused on human energy expressed in the states of

vitality and fatigue. But there may also be individual differences that explain human energy.

Furthermore, future research would benefit from using longitudinal designs or experience sampling approaches to further explore the dynamics among work-related strategies, micro-breaks, and human energy. Such designs will allow the examination of possible differences in responses depending on time of day or day of the week. Longitudinal designs can also help researchers understand the causal pathways among these strategies, micro-breaks, and human energy. Specifically, do employees high in energy “do relational things” (e.g., offer help, show gratitude) while people who feel fatigued “do self-focused things” (e.g., shop, vent, surf the web)? Or does “doing relational things” create energy?

Along similar lines, researchers may want to explore whether the strategies and micro-breaks that employees choose at work act as prevention or intervention methods. In other words, do employees pursue them to prevent energy drain or to regain energy once it has been depleted? Answering these questions will help us understand how employees can successfully sustain high levels of human energy over time. This in turn would underline the importance of sustainability as a human dimension.

In sum, what matters most for managing human energy at work appears to be strategies people pursue in the doing of their work. This conclusion takes a first step at connecting research on recovery from work demands and work breaks (Eden, 2001; Trougakos et al., 2008) on one hand with research on job design on the other hand. As a result, our study opens a new domain of research in organizations that will be fruitful in understanding the long-term sustainability of employees' psychological energy at work as well as the sustainability of organizations as a whole. Specifically, job designs high in autonomy give employees the opportunity to pursue activities during work that help them maintain and replenish their psychological resources—such as the opportunity to learn or to create high-quality connections with others. In this way, our study responds to Pfeffer's (2010) important call for a greater understanding of human sustainability at work.

References

- Ashford, S. J., Lee, C., & Bobko, P. (1989). Content, causes and the consequences of job insecurity: A theory-based measure and substantive test. *Academy of Management Journal*, 32(4), 803–829.
- Atwater, L., & Carmeli, A. (2009). Leader-member exchange, feelings of energy, and involvement in creative work. *The Leadership Quarterly*, 20, 264–275.
- Baker, W., Cross, R., & Wooten, M. (2003). Positive organizational network analysis and energizing relationships. In K. S. Cameron, J. E. Dutton, & R. Quinn (Eds.), *Positive organizational scholarship* (pp. 328–342). San Francisco: Berrett-Koehler Publishers.
- Bostic, T. J., Rubio, D. M., & Hood, M. (2000). A validation of the subjective vitality scale using structural equation modeling. *Social Indicators Research*, 52, 313–324.
- Brown, G. (1999). *The energy of life*. New York: Free Press.
- Byron, K. (2005). A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior*, 67, 169–198.
- Cable News Network. (2008). *Sleeping at work: More of us are doing it*. Retrieved May 11, 2010, from <http://www.cnn.com/2008/LIVING/worklife/06/10/lw.napping.work/index.html>
- Caldwell, L. L. (2005). Leisure and health: Why is leisure therapeutic? *British Journal of Guidance and Counseling*, 33, 7–26.
- Carmeli, A., Ben-Hador, B., Waldman, D. A., & Rupp, D. E. (2009). How leaders cultivate social capital and nurture employee vigor: Implications for job performance. *Journal of Applied Psychology*, 94, 1553–1561.
- Cohen-Meitar, R., Carmeli, A., & Waldman, D. A. (2009). Linking meaningfulness in the workplace to employee creativity: The intervening role of organizational identification and positive psychological experiences. *Creativity Research Journal*, 21, 361–375.
- Dababneh, A., Swanson, N., & Shell, R. L. (2001). Impact of added rest breaks on the productivity and well being of workers. *Ergonomics*, 44, 164–174.
- Dutton, J. E. (2003). *Energize your workplace: How to build and sustain high-quality connections at work*. San Francisco: Jossey-Bass Publishers.
- Eden, D. (2001). Vacations and other respites: Studying stress on and off the job. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 16, pp. 121–146). New York: Wiley.
- Elsbach, K. D., & Hargadon, A. B. (2006). Enhancing creativity through “mindless” work: A framework of workday design. *Organization Science*, 17, 470–483.
- Fortune Magazine (2006). How I work. Retrieved May 11, 2010, from http://money.cnn.com/popups/2006/fortune/how_i_work/frameset.8.exclude.html
- Fritz, C., & Sonnentag, S. (2005). Recovery, health, and job performance: Effects of weekend experiences. *Journal of Occupational Health Psychology*, 10, 187–199.
- Fritz, C., Sonnentag, S., Spector, P. E., & McInroe, J. (2010). The weekend matters: Relationships between stress recovery and affective experiences. *Journal of Organizational Behavior*, 31, 1137–1162.

- Grant, A. M. (2007). Relational job design and the motivation to make a prosocial difference. *Academy of Management Review*, 32, 393–417.
- Grant, A. M., Campbell, E. M., Chen, G., Cottone, K., Lapedis, D., & Lee, K. (2007). Impact and the art of motivation maintenance: The effects of contact with beneficiaries on persistence behavior. *Organizational Behavior and Human Decision Processes*, 103, 53–67.
- Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal*, 50, 327–347.
- Heaphy, E. D., & Dutton, J. E. (2008). Positive social interactions and the human body at work: Linking organizations and physiology. *Academy of Management Review*, 33, 137–162.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513–524.
- Hobfoll, S. E. (1998). *Stress, culture, and community: The psychology and physiology of stress*. New York: Plenum Press.
- Hobfoll, S. E., & Shirom, A. (2001). Conservation of resources theory: Applications to stress and management in the workplace. In R. T. Golembiewski (Ed.), *Handbook of organizational behavior*, 2nd ed. (pp. 57–80). New York: Marcel Dekker, Inc.
- Hochschild, A. (1990). *The second shift*. New York: Avon Books.
- Iwasaki, Y. (2003). Examining rival models of leisure coping mechanisms. *Leisure Sciences*, 25, 183–206.
- Joudrey, A. D., & Wallace, J. E. (2009). Leisure as a coping resource: A test of the job demand-control-support model. *Human Relations*, 62, 195–217.
- Kaplan, S. (2001). Meditation, restoration, and the management of mental fatigue. *Environment and Behavior*, 33, 480–506.
- Kark, R., & Carmeli, A. (2009). Alive and creating: The mediating role of vitality in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior*, 30, 785–804.
- Lin, B. C., & Fritz, C. (2011). *Give me a break: Relationships between recovery during lunch breaks and employee well-being* (Working Paper). Portland, OR: Portland State University.
- Loehr, J., & Schwartz, T. (2003). *The power of full engagement: Managing energy, not time, is the key to high performance and renewal*. New York: Free Press.
- McNair, D. M., Lorr, M., & Droppleman, L. F. (1992). *Manual for the profile of mood states*. San Diego, CA: Educational and Industrial Testing Service.
- Mojza, E. J., Lorenz, C., Sonnentag, S., & Binnewies, C. (2010). Daily recovery experiences: The role of volunteer work during leisure time. *Journal of Occupational Health Psychology*, 15, 60–74.
- Pfeffer, J. (2010). Building sustainable organizations: The human factor. *Academy of Management Perspectives*, 24, 34–45.
- Pratt, M. G., & Ashforth, B. E. (2003). Fostering meaningfulness in working and at work. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive organizational scholarship: Foundations of a new discipline* (pp. 309–327). San Francisco: Berrett-Koehler.
- Pronk, N. P., Crouse, S. F., & Rohack, J. J. (1995). Maximal exercise and acute mood response in women. *Physiology & Behavior*, 57, 1–4.
- Pugh, S. D. (2001). Service with a smile: Emotional contagion in the service encounter. *Academy of Management Journal*, 44, 1018–1027.
- Quinn, R. W. (2007). Energizing others in work relationships. In J. E. Dutton & B. R. Ragins (Eds.), *Exploring positive relationships at work: Building a theoretical and research foundation* (pp. 73–90). New York: Routledge.
- Quinn, R., & Dutton, J. E. (2005). Coordination as energy-in-conversation: A process theory of organizing. *Academy of Management Review*, 30, 36–57.
- Ryan, R. M., & Frederick, C. M. (1997). On energy, personality and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, 65, 529–565.
- Schor, J. (1992). *The overworked American: The unexpected decline in leisure*. New York: Basic Books.
- Scott, B. A., & Judge, T. A. (2006). Insomnia, emotions, and job satisfaction: A multilevel study. *Journal of Management*, 32, 622–645.
- Shraga, O., & Shirom, A. (2009). The construct validity of vigor and its antecedents: A qualitative study. *Human Relations*, 62, 271–291.
- Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, 88, 518–528.
- Sonnentag, S., Binnewies, C., & Mojza, E. J. (2008). “Did you have a nice evening?” A day-level study on recovery experiences, sleep, and affect. *Journal of Applied Psychology*, 3, 674–684.
- Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, 12, 204–221.
- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal*, 38, 1442–1465.
- Spreitzer, G. M. (1996). Social structural characteristics of psychological empowerment. *Academy of Management Journal*, 39, 483–504.
- Spreitzer, G., Sutcliffe, K., Dutton, J., Sonenshein, S., & Grant, A. M. (2005). A socially embedded model of thriving at work. *Special Issue: Frontiers of Organization Science, Part 2 of 2*, 16, 537–549.
- Storseth, F. (2007). Affective job insecurity and risk taking at work. *International Journal of Risk Assessment and Management*, 7, 189–204.
- Taylor, W. C. (2005). Transforming work breaks to promote health. *American Journal of Preventive Medicine*, 29, 461–465.
- Thayer, R. E., Newman, R., & McClain, T. M. (1994). Self-regulation of mood: Strategies for changing a bad mood, raising energy, and reducing tension. *Journal of Personality and Social Psychology*, 67, 910–925.

- Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, 42, 115–131.
- Trougakos, J. P., Beal, D. J., Green, S. G., & Weiss, H. M. (2008). Making the break count: An episodic examination of recovery activities, emotional experiences, and positive affective displays. *Academy of Management Journal*, 51, 131–146.
- Trougakos, J. P., & Hideg, I. (2009). Momentary work recovery: The role of within-day work breaks. In S. Sonnentag, P. L. Perrewé, & D. C. Ganster (Eds.), *Research in occupational stress and well-being* (pp. 37–84). Bingley, UK: Emerald Group Publishing Limited.
- Tucker, P., Folkard, S., & Macdonald, I. (2003). Rest breaks reduce accident risk. *Lancet*, 361, 680.
- U.S. Census Bureau. (2007). *Families and living arrangements*. Retrieved May 11, 2010, from <http://www.census.gov/population/www/socdemo/hh-fam.html>
- VandeWalle, D., Brown, S. P., Cron, W. L., & Slocum, J. W. (1999). The influence of goal orientation and self-regulation tactics on sales performance: A longitudinal field test. *Journal of Applied Psychology*, 84, 249–259.
- Van Dieen, J. H., & Oude Vrielink, H. H. E. (1998). Evaluation of work-rest schedules with respect to the effects of postural workload in standing work. *Ergonomics*, 41, 1832–1844.
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form*. Iowa City, IA: University of Iowa.
- William, T. (2006). Owner of a public relations firm. *Fast Company*, February, 2007. Retrieved June 9, 2011, from <http://www.fastcompany.com/blog/wendy-marx/brand-u-wendy-marx/careers-personal-branding-and-work-life-balance>
- Wrzesniewski, A., & Dutton, J. (2001). Crafting a job: Employees as active crafters of their work. *Academy of Management Review*, 26, 179–201.
-