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Journal of Management published online 29 April 2013

DOI: 10.1177/0149206313484518

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A Head Start or a Step Behind? Understanding How Dispositional and Motivational Resources Influence Emotional Exhaustion

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This 10-day diary study examined emotional exhaustion throughout the workday using conservation of resources and self-determination theories in the context of service work (nursing). Results revealed that the impact of prework emotional exhaustion on postwork emotional exhaustion was moderated by both personality and motivation. Neurotic individuals had high levels of postwork exhaustion regardless of their level of prework exhaustion. Extrinsically motivated individuals were especially likely to be exhausted after work if they were also exhausted before work. Finally, although intrinsically motivated individuals were less likely to be exhausted in general, the salutary effects of intrinsic motivation were reduced when prework exhaustion was high. These findings are consistent with the idea that neuroticism reflects a state of chronically worrying about resource loss, extrinsic motivation is a drain on personal resources, and intrinsic motivation is a resource that is less accessible as prework exhaustion levels increase.

Keywords: *well-being; stress; motivation*

A day of work can be an exhausting endeavor, especially for those who feel worn out before they even begin. Lack of sleep, a tendency to worry and ruminate over problems, emotionally demanding interactions at home, or illness may lead some employees to start

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their workdays “a step behind.” The problem of prework fatigue as a predictor of stress and poor performance during the workday has been well documented in previous research (e.g., Akerstedt, Knutsson, Westerholm, Theorell, Alfredsson, & Kecklund, 2004; Barker & Nussbaum, 2011; Ekstedt, Söderström, Akerstedt, Nilsson, Søndergaard, & Aleksander, 2006). Thus, it is important to learn the conditions under which prework exhaustion might have more or less deleterious effects. In this study, we focus on understanding how one’s level of emotional exhaustion—a form of burnout characterized by mental weariness and emotional depletion (Wright & Cropanzano, 1998)—when arriving at work influences subsequent levels of emotional exhaustion at the end of the workday and, in particular, how this process differs depending on individuals’ personalities and motivational tendencies.

Understanding how emotional exhaustion accumulates at the daily level is important for a number of reasons. First, daily levels of strain have been linked to important daily outcomes including job performance, organizational citizenship behavior, and job satisfaction (Fuller, Stanton, Fisher, Spitzmüller, Russell, & Smith, 2003; Halbesleben & Wheeler, 2011). Prior research has also shown that psychological states at work and home can “spill over” or influence one another as well as individuals with whom one frequently interacts (Ilies, Schwind, Wagner, Johnson, DeRue, & Ilgen, 2007; Song, Foo, & Uy, 2008).

Beyond the implications of feeling emotionally exhausted from work on a given day, both theoretical arguments and empirical evidence show that daily levels of strain can accumulate over time, particularly when respites or recovery opportunities necessary to restore psychological resources are limited (Fuller et al., 2003; Hobfoll, 1989). To truly understand this phenomenon, we must learn how the resource regulation process differs between individuals across a variety of situations and time frames. For whom and in what situations do resource deficits accumulate over time? While prior research has shown that recovery efforts off the job can lead to feeling energized at work and better job performance (Binnewies, Sonnentag, & Mojza, 2009), little is known about how one’s emotional exhaustion level upon arriving at work actually influences how exhausted one feels at the end of one’s workday and whether or not there are individual differences in this process.

In order to address the aforementioned research questions, we integrate both conservation of resources (COR) theory and self-determination theory (SDT) to propose a dynamic model that portrays dispositional extrinsic and intrinsic motivational tendencies as well as neuroticism as moderators of the relationship between daily prework and postwork emotional exhaustion. COR (Hobfoll, 1989) is the most prominent theoretical perspective used to understand the phenomenon of burnout and, in particular, the subdimension of emotional exhaustion (Halbesleben & Buckley, 2004). According to COR, work demands, like exerting effort and controlling one’s emotions, tax psychological resources (Baumeister, Vohs, & Tice, 2007). This loss of resources leads to psychological imbalance and, if left unreplenished, can ultimately result in chronic emotional exhaustion (Hobfoll & Freedy, 1993). At the same time, COR also proposes that positive reinforcements, such as personal energy, recognition, and accomplishment, are beneficial and can reduce emotional exhaustion. It should be noted that we are not conceptualizing morning emotional exhaustion as an external stressor. Rather, we see emotional exhaustion in the morning as a level of baseline *strain* or low perceived psychological resources, leading to future perceptions that one’s resources have been taxed.

According to Hobfoll (1998), motivation is an energy resource that, when expended, can buffer against resource loss and lead to the acquisition of other resources. However, little is known about how and under what conditions motivation reduces or enhances emotional exhaustion. Interestingly, most existing research linking emotional exhaustion and motivation has examined either motivation intensity or direction (Halbesleben & Bowler, 2007) but has not addressed whether motivation is intrinsic or extrinsic in nature (Sheldon, Turban, Brown, Barrick, & Judge, 2003). In order to gain a more precise understanding of how dispositional motivation *quantity* and *quality* influence change in emotional exhaustion over the course of the workday, we integrate COR theory with SDT. SDT is useful because it distinguishes between “higher quality” intrinsic motivation—a desire to exercise competencies and pursue work based on genuine interest—and “lower quality” extrinsic motivation—a less desirable form of motivation possessed by individuals who work primarily for extrinsic reasons like status, salary, or the approval of others (Ryan & Deci, 2000).

The current study contributes to the existing literature in several ways. The most noteworthy contribution is adding to our understanding of motivation’s dual role in generating and depleting resources. Although the emotional exhaustion aspect of the COR perspective has been examined in service work previously, the motivational aspect has not received sufficient attention. By adopting this perspective, we simultaneously answer calls in the literature to attend to the intrinsically satisfying components of service work (Brotheridge & Grandey, 2002) as well as calls for greater investigation of resources that might reduce emotional distress (Grandey, Fisk, & Steiner, 2005). Second, we also demonstrate the role of neuroticism as a moderator of the relationship between pre- and postwork emotional exhaustion. This further enriches the COR perspective on dispositional resources and emotional exhaustion. A final contribution is our examination of how differences in daily prework emotional exhaustion affect how well individuals adapt to demands encountered throughout the workday. One of the central issues in COR is the variable resources individuals have at a particular moment in time (Hobfoll, 1989), so it is crucial to examine these processes as they unfold over time. We are aware of no research that has provided a detailed examination of the moderators of the relationship between pre- and postwork emotional exhaustion.

In the sections to follow, we first describe the main effect of prework emotional exhaustion on postwork emotional exhaustion. We then explain the main and moderating effects of neuroticism, intrinsic motivation, and extrinsic motivation on emotional exhaustion. To test our propositions about how habitual motivation quality and quantity influence emotional exhaustion, we conduct a multilevel, twice-daily diary study over the course of a 10-day period.

Theory and Hypotheses

Prework Emotional Exhaustion and Postwork Emotional Exhaustion

One of the assumptions underlying COR is that emotional exhaustion reflects a state of depleted resources. SDT (Deci & Ryan, 2012) also describes how lack of energy can create dysfunctions in self-regulatory processes, thereby leading to more exhausting controlled (as opposed to energizing autonomous) self-regulation. As such, individuals who are emotion-

ally exhausted prior to work have fewer resources to cope with demands throughout the course of their workday and are therefore likely to be more emotionally exhausted following work unless opportunities to rest and recover are provided (Sonnentag, Binnewies, & Mojza, 2008). Because exhaustion persists over the transition from work to a source of rest and recuperation like home, exhaustion would appear to be even more likely to persist over the course of a demanding workday. As noted previously, research has shown that experiences from work spill over to home (Judge, Ilies, & Scott, 2006) and experiences from home spill over into work (e.g., Judge & Ilies, 2004; Williams & Alliger, 1994). Given the clear link established in prior research examining the spillover of prework or home moods and attitudes with postwork moods and attitudes, we do not offer a formal hypothesis for this relationship. Instead, in the sections that follow, we build upon prior research by identifying factors that exacerbate and mitigate this relationship.

Neuroticism and Postwork Exhaustion

Besides situational pressures indexed by prework exhaustion, dispositions can also influence individual reactivity to resource threats. Consistent with COR theory's perspective on threat of resource loss and strain, we theorize that neuroticism can be conceptualized as a dispositional tendency to perceive that one's resources are in jeopardy. As Hobfoll (1989) noted, people become stressed or exhausted when they believe there is a threat to their resources, not just by the actual experience of resource threat. Both theory and empirical research suggest that neuroticism does embody a chronic tendency to be sensitive to threats in the environment (e.g., Suls, 2001; Watson & Clark, 1984). Unlike previous research demonstrating that individuals higher in neuroticism are hyperreactive to *stressors* (e.g., Suls & Martin, 2005), we examine how individuals higher in neuroticism react to baseline levels of *strain* (i.e., prework emotional exhaustion) after taking daily stressor levels into account.

We argue that whereas individuals high in neuroticism may be more sensitive to their external environments, individuals who are lower in neuroticism may have greater sensitivity to their own internal resource levels. Those already in a dispositional state of emotional distress (i.e., high in neuroticism) tend to carry this level of strain because they are indeed more prone to find a wide variety of situations in their daily lives strain-inducing (e.g., Bolger & Schilling, 1991; Larsen & Ketelaar, 1991; Suls & Martin, 2005). Here we emphasize the fact that neuroticism is a *chronic* tendency to evaluate the environment as full of threats. Conversely, individuals who have lower baseline levels of strain (lower neuroticism and lower morning exhaustion) have the most resources to adapt to problems in their environment and therefore will report the lowest levels of strain at the end of the workday. As such, neurotic individuals who consistently find their environments full of resource threats are likely to experience emotional exhaustion at the end of the day irrespective of their prework emotional exhaustion. Conversely, those who are less neurotic are likely to be more prone to perceive resource losses only on days when they start out with low resources (i.e., when prework emotional exhaustion is high) relative to days when they start out with high resources. The net result is that neurotic individuals will show a persistent pattern of high

exhaustion independent of their levels of prework emotional exhaustion, whereas emotionally stable individuals will show a greater sensitivity to prework emotional exhaustion levels. Metaphorically speaking, like a person with weak muscles, neurotic individuals will feel exhausted regardless of how much strain is put on them, whereas, like a physically strong person, those who are less neurotic are highly likely to feel exhausted only if there is a substantial prework burden placed on them.

Hypothesis 1: Neuroticism moderates the relationship between prework and postwork emotional exhaustion, such that the relationship between prework and postwork emotional exhaustion will be more strongly positive for individuals who are low in neuroticism than for individuals who are high in neuroticism.

Extrinsic and Intrinsic Motivation and Postwork Exhaustion

Although most researchers will be familiar with the SDT concept of extrinsic rewards undermining intrinsic motivation, intrinsic and extrinsic motivation can be thought of as two independent variables, such that a person can be high or low in both extrinsic and intrinsic motivation (Amabile, Hill, Hennessey, & Tighe, 1994; Eisenberger, Pierce, & Cameron, 1999; Eisenberger, Rhoades, & Cameron, 1999; Vansteenkiste, Neyrinck, Niemiec, Soenens, De Witte, & Van den Broeck, 2007). Such a case could arise for an individual who is highly interested in the wages and status that come from a job but who also enjoys the tasks of the job. Similarly, a person may not be especially interested in either the outcomes of a job or motivated by the intrinsic quality of the tasks.

We first turn our attention toward extrinsic motivation. In the context of SDT, we see extrinsic motivation primarily as a demand on resources. Extrinsically motivated individuals work to obtain extrinsic consequences, such as money, prestige, or satisfying the expectations of others (deCharms, 1968; Deci & Ryan, 2008). Those high in extrinsic motivation are indeed more motivated than people low in extrinsic motivation (Amabile et al., 1994), but they are likely to be putting in these efforts as a means to an end. In service work, someone who is extrinsically motivated might be motivated because of a desire to receive a paycheck, feelings of obligation to care for others, or the work's carrying a certain level of social respect in society. While there are some compelling and positive features of pursuing these extrinsic rewards, Deci and Ryan (2000) argue that the pursuit of extrinsic goals is less fulfilling in terms of our fundamental needs for competence, relatedness, and autonomy. Research has also shown that attempts to achieve extrinsic goals can lead to reduced vitality and greater psychological strain (Kasser & Ryan, 1993). The provision of extrinsic rewards for performance has also been shown to increase performance pressure (Eisenberger & Aselage, 2009), and the demand of being under pressure may increase exhaustion. In sum, the process of exerting effort toward achieving extrinsic rewards is unlikely to lead to feelings of fulfillment. Rather, an increase in work demands is more likely to lead extrinsically motivated individuals to feel overwhelmed and exhausted at the end of the day. Thus we expect to find, consistent with this prior research, a main effect in which extrinsic motivation is positively related to emotional exhaustion at the end of the day.

While being extrinsically motivated in general should increase pressure to perform (Eisenberger & Aselage, 2009), this pressure is likely to be even more demanding for employees who are tired and worn out when the day begins. Being motivated means putting in extra effort, and if resources are already taxed, individuals will feel especially worn out as they exert such effort. As Maslach, Schaufeli, and Leiter (2001: 405) put it, "You have to have been on fire in order to burn out." A person who is extrinsically motivated is focused strongly on the consequences of his or her work and may see the work as more burdensome as the number of obstacles to achieving extrinsic goals increases. As such, a burden like prework emotional exhaustion will seem especially onerous. Conversely, those who are not motivated primarily by the consequences or outcomes of their work may be better able to compensate for prework exhaustion by relaxing their work efforts and taking breaks (Troughakos, Beal, Green, & Weiss, 2008). Thus, we arrive at the following moderating hypothesis:

Hypothesis 2: Extrinsic motivation moderates the relationship between prework and postwork emotional exhaustion, such that the relationship between prework emotional exhaustion and postwork emotional exhaustion will be more strongly positive for those high in extrinsic motivation than for those low in extrinsic motivation.

Unlike extrinsic motivation, which acts as a demand on resources, intrinsic motivation—a desire to engage in something because of the pleasure and interest derived from it (Deci & Ryan, 2008)—has been found to reduce emotional exhaustion (Blais, Brière, Lachance, Riddle, & Vallerand, 1993; Fernet, Gagné, & Austin, 2010; Fernet, Guay, & Senécal, 2004; Grant & Sonnentag, 2010). According to SDT, intrinsic motivation energizes workers, reducing the extent to which they experience emotional exhaustion (Ryan & Deci, 2000; Thierry, 1990). This suggests, consistent with COR theory, that intrinsic motivation is a valuable personal resource because it serves as a means for attainment of desired outcomes (Hobfoll, 1989). Thus, it is anticipated that, consistent with prior research, the main effect of intrinsic motivation will be to diminish emotional exhaustion.

We would also expect that those who possess higher levels of intrinsic motivation will be especially likely to benefit when they are in a state of comparative depletion, that is, when they are emotionally exhausted at the start of the work shift. In other words, by drawing on a positive motivational resource to buffer the effects of depletion, we expect that the relationship between prework and postwork emotional exhaustion will be weaker for those who are high in intrinsic motivation relative to those who are low in intrinsic motivation.

Hypothesis 3: Intrinsic motivation moderates the relationship between prework and postwork emotional exhaustion, such that the relationship between prework emotional exhaustion and postwork emotional exhaustion will be more strongly positive for those low in intrinsic motivation than for those high in intrinsic motivation.

Method

Participants and Procedure

Participants were 133 nurses employed in hospitals throughout the state of Florida. To be eligible for the study, individuals were required to work full-time ($M_{hours} = 41.53$, $SD = 7.11$). Participants reported an average of 19.71 years of experience ($SD = 11.76$) and an average of 10.71 years of experience at their current organizations ($SD = 8.49$). A slight majority (55.6%) of the sample worked 12-hour shifts (35.1% of which were evenings and nights), 16.5% of the sample worked 8-hour shifts (13.6% of which were evenings and nights), and 27.8% of the sample worked “other” schedules, often comprising combinations of shifts. The average age of the sample was 47.21 years ($SD = 9.86$). Participants were predominantly female (97%) and Caucasian (91%). Compared to the 2009 population of nurses licensed in Florida ($M_{age} = 47.49$, 90.3% female, and 69.8% Caucasian), our sample was similar with respect to age but contained a higher percentage of women and was less demographically diverse (Florida Center for Nursing, 2009).

Participants were recruited in two ways. First, a contact from a large hospital distributed surveys and e-mails to nursing supervisors. Each survey packet contained a detailed letter and consent form explaining the study procedure and emphasizing the confidentiality of individual responses, an initial survey, daily surveys, compensation forms, and a prepaid, preaddressed return envelope. This recruitment method yielded 15 usable surveys. Because we were unable to oversee the extent to which supervisors successfully publicized the study using this method of recruitment, we could not calculate a response rate for this sample. A second recruitment effort was conducted by placing an advertisement on a state nursing association website. Potential participants were directed to a brief online registration form that described study requirements and procedures. The first 200 eligible individuals to register for the study were mailed survey packets containing the same materials used for the preceding recruitment effort. Of these surveys, 122 (61%) were at least partially completed and returned. However, missing data or failure to complete daily surveys at instructed times resulted in the removal of 4 participants' data from final analyses, further reducing the number of usable surveys to 118 (59%). In sum, combining responses from both recruitment methods yielded usable data from a total of 133 participants.

To capture the dynamic, multilevel nature of the relationships proposed in this study, a diary method was used. Specifically, participants completed an initial survey and two short surveys each day for 10 workdays. Nurses were instructed to complete the initial survey prior to completing the daily surveys and to complete the daily surveys immediately before working and immediately after working. We also asked nurses to date each survey and to document the time that they arrived and left work each day. Though we requested daily surveys be completed within a 3-week period, many nurses (38.3%) required additional time to complete the study. The need for these extensions is attributable, in part, to the fact that several participants worked three 12-hour days (36 hours) per week and thus did not work 10 days over the course of 3 weeks.

Level-1 (Within-Individual) Measures

Prework Emotional Exhaustion

Emotional exhaustion before work was assessed with a previously validated, 21-item measure developed by Pines and Aronson (1988). The instructions for the scale were modified from the original, such that participants were asked to indicate, using a 1 (*not at all*) to 5 (*very much*) response scale, the extent to which they felt “like the following at the present time (at this very moment).” Sample items included “tired,” “rundown,” and “energetic” (reverse scored). The mean coefficient alpha (across days) for this measure was .94.

Postwork Emotional Exhaustion

To reduce daily participation demands, a shortened measure using the first 11 items from the prework emotional exhaustion scale (Pines & Aronson, 1988) was used to assess emotional exhaustion at the end of the workday. As with the prework emotional exhaustion measure, participants were asked to indicate the extent to which they felt “like the following at the present time (at this very moment),” using a 1 (*not at all*) to 5 (*very much*) response scale. Sample items included “emotionally exhausted,” “wiped out,” and “happy” (reverse scored). The mean coefficient alpha (across days) for this measure was .94.

Level-2 (Between-Individual) Measures

Neuroticism

Neuroticism was assessed with eight items from the Big Five Inventory (John, Donahue, & Kentle, 1991). Participants were asked to rate the extent to which they saw themselves as someone who “is depressed, blue,” “is relaxed, handles stress well” (reverse scored), “worries a lot,” “gets nervous easily,” and so on, using a 1 (*disagree strongly*) to 5 (*agree strongly*) response scale. The coefficient alpha for this scale was .82.

Extrinsic Motivation

Extrinsic motivation was measured with 12 items from the Global Motivation Scale (Guay, Mageau, & Vallerand, 2003). Items represented three dimensions: identified, introjected, and external regulation. Sample items corresponding to each dimension included, “I go to work as a means to obtain my objectives,” “I go to work because I would beat myself up for not going,” and “I go to work because I do not want to disappoint certain people.” Participants were asked to indicate the extent to which they agreed with each item using a 1 (*strongly disagree*) to 5 (*strongly agree*) response scale. Item responses were averaged to form an overall extrinsic motivation measure. The coefficient alpha for this scale was .87.

Intrinsic Motivation

Like extrinsic motivation, intrinsic motivation was also measured with 12 items from the Global Motivation Scale (Guay et al., 2003). Items captured three dimensions of intrinsic motivation including intrinsic motivation to know, intrinsic motivation toward accomplishment, and intrinsic motivation to experience stimulation. Sample items corresponding to each dimension included, "I go to work for the pleasure of learning new, interesting things," "I go to work for the pleasure I feel as I become more and more skilled," and "I go to work for the enjoyable feelings I will experience." Scale anchors and instructions were identical to those used to assess extrinsic motivation. The coefficient alpha for this scale was .93.

Control Variables

When all other factors are held constant, individuals who encounter more stressors on a given day can be expected to experience higher levels of emotional exhaustion on that day. If the level of postshift emotional exhaustion is higher for Person A than for Person B (provided other factors, including prework emotional exhaustion, are equal), then the slope between preshift and postshift emotional exhaustion will be stronger for Person A. Thus, the effects of neuroticism, extrinsic motivation, and intrinsic motivation on the preshift–postshift emotional exhaustion relationship can be confounded with the effects of stressors. In order to account for this potential confound, we controlled for nurses' exposure to a number of daily stressors at Level 1. Participants completed 24 items from the Expanded Nursing Stress Scale (French, Lenton, Walters, & Eyles, 2000). Items represented eight separate factors including dealing with death and dying, conflict with physicians, inadequate preparation, problems with peers, problems with supervisors, workload, uncertainty concerning treatment, and dealing with patients and their families. Sample items representative of each factor include "talking to a patient about death," "criticism by a physician," "having no answer for patient," "difficulty with another nurse in immediate work setting," "conflict with a supervisor," "insufficient time to finish tasks," "not knowing what patient or family should be told," and "patients' unreasonable demands." Nurses were asked to place an *X* next to each situation that they experienced, engaged in, or encountered "at work today," and the number of *X*s was summed to capture nurses' daily exposure to stressors. The coefficient alpha for this scale was .74. Other control variables included education level as well as age and gender, which have been linked to emotional exhaustion (Cordes & Dougherty, 1993; Schaubroeck & Jones, 2000; Zapf, Seifert, Schmutte, Mertini, & Holz, 2001).

Analyses

Because daily data were nested within individuals, hierarchical linear modeling (HLM 6.0; Raudenbush, Bryk, Cheong, & Congdon, 2004)—which accounts for the dependence among daily measurements within each person—was used to model the relationships among daily and initial measures. The within-individual level of analysis (Level 1) includes daily

Table 1
Descriptive Statistics of, and Intercorrelations Among, Study Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
Prework emotional exhaustion (L1)	1.72	0.56	.94								
Stressors (L1)	3.73	3.15	.34**	.74							
Postwork emotional exhaustion (L1)	2.21	0.82	.65**	.51**	.94						
Age (L2)	47.21	9.86	-.06	-.10	-.13	n/a					
Gender (L2)	0.97	0.17	-.07	-.08	-.03	.06*	n/a				
Years of education (L2)	15.53	1.64	.09	-.07	-.05	.08**	.00	n/a			
Neuroticism (L2)	2.36	0.78	.43**	.15	.35**	-.05	.02	.03	.82		
Extrinsic motivation (L2)	3.15	0.75	.26**	.13	.15	-.02	.08**	-.01	.27**	.87	
Intrinsic motivation (L2)	3.58	0.72	-.18*	-.19*	-.22**	.02	.08**	-.09**	-.14**	.34**	.93

Notes: L1 = Level 1; L2 = Level 2. Correlations of L1 variables with L2 variables were estimated using average scores on the L1 variables. Coefficient alpha (α) reliability estimates are listed on the diagonal in **bold**. n (L1) = 1,325. n (L2) = 133.

* $p < .05$. ** $p < .01$.

measures of emotional exhaustion (pre- and postwork) and daily stressors (postwork). The between-individual level of analysis (Level 2) includes variables measured using the initial survey: neuroticism, extrinsic motivation, intrinsic motivation, and demographics.

Results

Descriptive Statistics, Correlations, and Discriminant Validity of Measures

Descriptive statistics of and intercorrelations among the variables are provided in Table 1. Several aspects of the analyses reported in this table are worth mention. First, the standard deviations for the Level-1 variables are within-individual. The between-individual standard deviations (SD_b) for prework emotional exhaustion, extrinsic motivation, intrinsic motivation, and postwork emotional exhaustion were $SD_b = 0.56$, $SD_b = 0.82$, $SD_b = 0.75$, and $SD_b = 0.72$, respectively. Second, to provide correlations of the between-individual (Level-2) with the within-individual (Level-1) variables, the latter were aggregated (averaged over the days), and thus these correlations do not represent multilevel relationships.

Partitioning of Variance Components

As a first step in our multilevel analyses, we investigated whether systematic within- and between-individual variance existed in within-individual or Level-1 variables (prework emotional exhaustion, postwork emotional exhaustion, and stressors) by estimating a null model for each variable. The null model partitions the total variance of a variable into within- and between-individual components, and the intercept for each null model represents

Table 2
Parameter Estimates and Variance Components of Null Models for Within-Individual (Level-1) Variables

Level-1 Variable	Intercept (π_0)	Within-Individual Variance (ρ_0^2)	Between-Individual Variance (τ_0)	Percentage Variability Within-Individual
Prework emotional exhaustion	1.724**	0.127	0.193**	39.69
Stressors	3.730**	4.301	5.657**	43.19
Postwork emotional exhaustion	2.214**	0.280	0.387**	42.07

Notes: π_0 = pooled intercept representing average level of Level-1 variable across individuals. ρ_0^2 = within-individual variance in Level-1 variable. τ_0 = between-individual variance in Level-1 variable. Percentage variability within-individual is computed as $\frac{\rho_0^2}{(\rho_0^2 + \tau_0)}$.

** $p < .01$.

the average level of that variable across individuals. If no within-individual variance exists in the criterion variables, then HLM would not be appropriate because there would be only between-individual variance to explain (i.e., there would be only one level of analysis). As shown in Table 2, the null model results indicated that there was significant between-individual variance in each of the variables ($p < .01$ for all variables) and that a nontrivial proportion of the total variance in these dependent variables was within individuals. Specifically, 40% of the variance in prework emotional exhaustion was within-person, 42% of the variance in postwork emotional exhaustion was within-person, and 43% of the variance in stressor levels was within-person. These results are consistent with variability estimates from the emotional labor (Judge, Woolf, & Hurst, 2009) and job attitude (Heller, Watson, & Ilies, 2006) literatures and suggest that hierarchical modeling of these data was appropriate in that there was within-person variability in these concepts to potentially be explained.

Tests of Hypotheses

Before proceeding with the hypotheses tests, some discussion of how the data were treated is in order. In the HLM analyses, the Level-1 predictor variables were centered around their person-level means. This removes one primary source of method variance, though the prework to postwork time separation also ameliorates such concerns. Below we describe the HLM results; we first discuss the main effects of the Level-1 and Level-2 independent variables on postshift emotional exhaustion and then turn our attention to the results involving cross-level moderation (i.e., the effects of the Level-2 variables on Level-1 slopes).

The results from the multilevel analyses are provided in Table 3. As shown in the table, the intercept for morning emotional exhaustion was significant ($\hat{\gamma}_{00} = 2.214$, $p < .01$). Additionally, prework emotional exhaustion positively predicted postwork emotional

Table 3
Multilevel Regressions Predicting Postwork Emotional Exhaustion

	$\hat{\gamma}$	SE $\hat{\gamma}$	T-value
Intercept			
Intercept, γ_{00}	2.214	0.047	47.526**
Age, γ_{01}	-0.010	0.004	-2.444*
Gender (male = 1, female = 2), γ_{02}	-0.162	0.238	-0.681
Years of education, γ_{03}	-0.020	0.029	-0.697
Neuroticism, γ_{04}	0.285	0.063	4.507**
Extrinsic motivation, γ_{05}	0.162	0.065	2.468**
Intrinsic motivation, γ_{06}	-0.256	0.062	-4.101**
Stressor slope			
Intercept, γ_{10}	0.081	0.009	9.265**
Prework emotional exhaustion slope			
Intercept, γ_{20}	0.544	0.054	10.128**
Neuroticism, γ_{21}	-0.200	0.069	2.860**
Extrinsic motivation, γ_{22}	0.127	0.065	1.960*
Intrinsic motivation, γ_{23}	0.137	0.067	2.050*

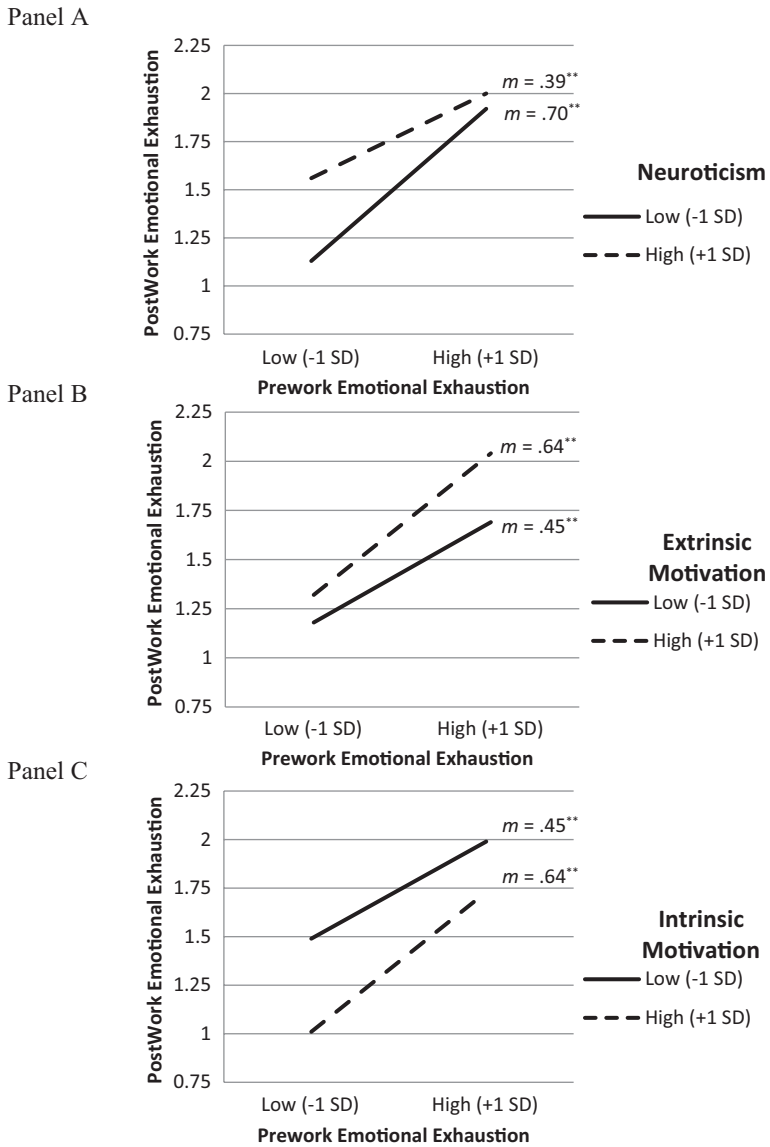
Notes: n (Level-1) = 1,306. n (Level-2) = 133. Both Level-1 and Level-2 variables are centered at their respective means.

* $p < .05$. ** $p < .01$.

exhaustion ($\hat{\gamma}_{20} = .544, p < .01$) even after controlling for daily stressors, meaning that, as expected, when individuals were emotionally exhausted before working they were more likely to be emotionally exhausted after working as well. Two between-individual variables—age ($\hat{\gamma} = -.010, p < .01$) and intrinsic motivation ($\hat{\gamma}_{01} = -.256, p < .01$)—negatively predicted postwork emotional exhaustion, implying that older individuals and those who were intrinsically motivated to perform their jobs had lower average levels of postwork emotional exhaustion. Conversely, both between-individual neuroticism ($\hat{\gamma}_{04} = .285, p < .01$) and between-individual extrinsic motivation ($\hat{\gamma}_{05} = .162, p < .01$) positively predicted postwork emotional exhaustion. In sum, these analyses of main effects suggest that prework emotional exhaustion, neuroticism, and extrinsic motivation increase postwork emotional exhaustion, whereas intrinsic motivation decreases postwork emotional exhaustion.

The cross-level moderating effects are tested in HLM by regressing the within-individual (Level-1) slopes on the hypothesized between-individual (Level-2) variables. Supplementary analyses demonstrated that, consistent with our theorizing regarding their increased sensitivity to the external environment, individuals higher in neuroticism do indeed experience higher levels of both stressors ($\hat{\gamma} = .598, p < .05$) and prework emotional exhaustion on a daily basis ($\hat{\gamma} = .312, p < .01$). Consistent with Hypothesis 1 and as shown in Table 3, neuroticism attenuated the positive relationship between prework emotional exhaustion and postwork emotional exhaustion ($\hat{\gamma} = -.200, p < .01$). The graph of the moderation effect in Figure 1, Panel A, reveals that, compared to their less neurotic counterparts, neurotic individuals experienced higher overall levels of postwork emotional exhaustion but that this emotional exhaustion was less contingent on prework emotional exhaustion. More specifically, the prework emotional exhaustion–postwork emotional exhaustion simple slope for

Figure 1
Neuroticism (Panel A), Extrinsic Motivation (Panel B), and Intrinsic Motivation (Panel C) as Between-Individual Moderators of the Within-Individual Prework Emotional Exhaustion–Postwork Emotional Exhaustion Relationship



individuals who were 1 standard deviation below the mean on neuroticism ($m = .70, p < .01$) was 1.8 times as large as the simple slope for individuals who were 1 standard deviation above the mean on neuroticism ($m = .39, p < .01$).

As shown in Table 3, extrinsic motivation significantly predicted the prework emotional exhaustion–postwork emotional exhaustion slope ($\hat{\gamma}_{22} = .127, p < .01$). As shown in Figure 1, Panel B, prework emotional exhaustion was more positively related to postwork emotional exhaustion for those who were extrinsically motivated relative to those who were not extrinsically motivated. Thus, Hypothesis 2 was supported. Hypothesis 3 was not supported in that, as shown in Table 3, intrinsic motivation *positively* predicted the prework emotional exhaustion–postwork emotional exhaustion slope ($\hat{\gamma}_{23} = .137, p < .05$). Figure 1, Panel C, reveals that prework emotional exhaustion was more positively related to postwork emotional exhaustion for those who were intrinsically motivated. Interestingly, the prework emotional exhaustion–postwork emotional exhaustion simple slopes for individuals 1 standard deviation below the mean on either intrinsic motivation or extrinsic motivation were equal ($m = .45, p < .01$). The simple slopes for individuals 1 standard deviation above the mean on either intrinsic motivation or extrinsic motivation were also equal ($m = .64, p < .01$). The similarity between these simple slopes suggests that, in the short term (at the daily level), regardless of the nature of one’s motivation, one who has a tendency to be motivated can expect his or her prework–postwork emotional exhaustion relationship to be roughly 1.4 times as strong as the prework–postwork emotional exhaustion relationship typical for an individual who is less motivated. It is crucial to recognize, however, that although both intrinsic and extrinsic motivation can increase one’s short-term levels of emotional exhaustion, the results involving the main effects of motivation show that the cumulative effects of intrinsic and extrinsic motivation are, in fact, quite different.

It should also be emphasized that although the graphs show most levels of emotional exhaustion peaking around a value of 2, we believe there is unlikely to be a strong ceiling effect in the data. In our individual-level data, there are a number of occasions during which individuals reported scores above 2. Moreover, although the predicted averages for emotional exhaustion at the end of the workday don’t exceed 2 when using plus or minus 1 standard deviation as values for the independent variables, expanding the graph to include individuals who scored above 1 standard deviation on the morning emotional exhaustion measure resulted in predicted values well above 2.

Additionally, based on a suggestion from an anonymous reviewer, we examined whether there were any higher-order interactions between intrinsic and extrinsic motivation on the slope of the relationship between pre- and postwork exhaustion. We found that the coefficient for this interaction between intrinsic and extrinsic motivation was not significant ($\hat{\gamma} = .057, p = .232$). We further examined whether neuroticism interacted with both forms of motivation and found that there was not a significant interaction with intrinsic motivation ($\hat{\gamma} = -.118, p = .188$) nor extrinsic motivation ($\hat{\gamma} = .034, p = .680$).

Discussion

At the outset of this manuscript, we asked whether employees who possess the “right” form of work motivation are less drained by the requirements of their service roles. To better

understand this issue, we integrated COR and SDT to develop and test a model that illuminated the conditions under which motivation and certain individual dispositions increased and decreased emotional exhaustion. Our empirical findings partially support our model, suggesting that COR and SDT can indeed be used in tandem to predict how motivation influences the extent to which workers feel emotionally exhausted. However, our results showing that intrinsic motivation is less valuable as a resource for those who begin the day emotionally exhausted also requires additional theoretical consideration because these findings directly contradict those that might be expected based on SDT.

Another interesting finding was that neurotic individuals tend to be less variable in their exhaustion levels than their emotionally stable counterparts. Examination of the moderation plots reveals a picture that is in line with the tenets of COR. Figure 1, Panel A, shows that the lowest level of emotional exhaustion was found for those who were low in neuroticism. Thus, our results demonstrate not that neuroticism decreases emotional exhaustion but rather that neurotic individuals possess relatively high levels of emotional exhaustion regardless of their prework emotional exhaustion levels. Such a finding—when viewed through the lens of COR—is consistent with the idea that neurotic individuals are marked by chronically lower levels of cognitive and emotional resources for adapting to situations of depleted resources (e.g., Connor-Smith & Flachsbart, 2007; Giardini & Frese, 2006; Hobfoll, 2001).

Like neuroticism, extrinsic motivation was positively linked to daily emotional exhaustion levels. This finding is consistent with work showing that extrinsic motivation is negatively related to positive psychological states (Kasser & Ryan, 1993) and, in line with SDT, implies not only that the pursuit of extrinsic goals can be especially unsatisfying (Ryan, Huta, & Deci, 2008) but also that such pursuits are exhausting. Extrinsically motivated individuals differ from neurotic individuals, however, in that the postshift emotional exhaustion levels of the extrinsically motivated are sensitive to prework emotional exhaustion levels. In documenting this relationship, our study is the first to show that, although the extrinsically motivated may be more likely to experience daily emotional exhaustion in general, they are especially prone to doing so when they begin their workday “a step behind.” This dynamic is consistent with the notion that individuals who are focused primarily on the outcomes of work both have fewer resources available to reduce emotional exhaustion and also are quicker than the less extrinsically motivated to drain these resources.

Unlike neuroticism and extrinsic motivation, intrinsic motivation was negatively related to postshift emotional exhaustion when preshift emotional exhaustion was held constant. The negative relationship between intrinsic motivation and emotional exhaustion found in this study is consistent with findings yielded from prior cross-sectional research (e.g., Fernet et al., 2004) and adds credence to both the idea that intrinsic motivation can act as a psychological resource and the idea that some people find emotional labor energizing and interesting (Côté & Morgan, 2002).

However, our results also reveal that the conditions under which intrinsic motivation can serve as a daily exhaustion-reducing resource are limited. Individuals who are intrinsically motivated are—like the extrinsically motivated—exceptionally sensitive to preshift levels of emotional exhaustion. While it is true that the lowest levels of postshift emotional exhaustion are found for those who begin the day low in emotional exhaustion and have high levels of intrinsic motivation, the gap in emotional exhaustion

between individuals who possess different levels of intrinsic motivation narrows when the intrinsically motivated begin their workday feeling drained. The form of this interaction was such that at low levels of prework exhaustion, intrinsic motivation appeared to be a readily accessible resource that reduced postwork exhaustion, but at high levels of prework emotional exhaustion, intrinsic motivation's efficacy was reduced.

How can we account for these findings? One possibility is that autonomous self-regulation is a resource that can be used only when one is not exhausted. As noted by Deci and Ryan (2012), psychological energy or vitality is necessary for effective self-regulation. When one begins work in a state of exhaustion, to make it through the day, one may need to engage in controlled rather than autonomous self-regulation. As such, when exhausted at the start of work, it may be difficult to express one's more typical tendency to self-regulate through more intrinsic, autonomous processes. If this is the case, future research may want to examine whether prework emotional exhaustion and momentary intrinsic motivation can exist at the same time.

Limitations and Future Research Directions

The results of this study should be interpreted with its limitations in mind. First, although within-person analyses allow researchers to rule out individual differences or stable environmental factors as possible explanations for relationships between work demands and emotional exhaustion (Bolger, Davis, & Rafaeli, 2003), our data were derived from a common source, which raises the possibility that method variance explains some of our relationships (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, much of the design of our research is likely to mitigate these concerns. Unlike main-effect studies that are potentially and easily confounded with omitted variables, moderator relationships are less obviously prone to method biases (Siemsen, Roth, & Oliveira, 2009). Our data also were individual mean-centered, so individual differences that could lead to biases in reports would be removed. Moreover, the measures were separated in time, with our Level-2 variables being assessed at the start of the study period; the prework and postwork emotional exhaustion scales were also separated in time.

Another potential limitation of this study is that our results were entirely from individuals in the nursing profession, which limits our ability to generalize our findings to other occupations. We note that much of the original work on the concept of emotional exhaustion did emphasize the helping professions, where emotional exhaustion is likely to be most acute. The nursing population may also have certain methodological advantages for a diary study, since nurses' work roles require them to prepare and review documentation at the start and end of every shift—thus, they can integrate a diary survey into their daily routine more easily than many other workers. Despite this advantage, future research should examine whether these results extend to other occupations.

Having established that intrinsic motivation can reduce emotional exhaustion, future research might also examine how and why individuals feel more intrinsically motivated for service or emotion work on some days than others. It may be that on some days workers have an easier time emphasizing the fun or rewarding aspects of emotion work. Recent

theoretical work by Grant (2007) has described how having a direct, observable impact on beneficiaries of work can improve prosocial motivation, especially among those who have an affective commitment to making a difference. Future research might test this model in the context of direct service work. Such work may have applied value, demonstrating how work environments can be designed to simultaneously maximize employee motivation and minimize emotional exhaustion.

Practical Implications

Our study has several practical implications. COR theory proposes that individuals' levels of emotional exhaustion can be minimized by increasing their psychological resources (Hobfoll & Freedy, 1993). Given that intrinsic motivation can be considered a powerful resource, some researchers have sensibly recommended implementing interventions to increase intrinsic motivation in order to prevent emotional exhaustion (e.g., Low, Cravens, Grant, & Moncrief, 2001). Yet our findings show that employees who begin their workdays a "step behind" will be unable to maximally benefit from such interventions.

Although it may seem unlikely for employees to leave work feeling less emotionally exhausted than when they arrived, some researchers (Sonnetag, 2005: 273) have suggested that "mentally distancing oneself from the job requirements *during* work might appear as a promising 'escape' route for mentally exhausted employees" who cannot psychologically detach themselves from work during off-hours. This suggests that temporarily "taking it easy" at work may at least reduce the rate at which resource deficits accumulate. Yet some individuals may be more willing to employ this resource regulation tactic than others. For instance, individuals who possess dispositional tendencies to be motivated may be unwilling to temporarily disengage from work or to complete less challenging assignments on a particular day in order to decrease the rate at which their exhaustion levels accumulate. Because research has shown that work becomes more effortful when employees arrive at work with less energy (Binnewies et al., 2009), it seems likely that those who arrive at work exhausted and unwilling to temporarily disengage will be at increased risk of having their prework exhaustion levels substantially increase over the course of the workday.

Knowledge that the effectiveness of intrinsic motivation as a psychological resource diminishes as preshift emotional exhaustion levels increase means that it is important for managers to pay attention to when typically energetic employees are unusually drained. Although it may be tempting for managers to consistently assign passionate employees challenging work tasks, even the most characteristically vigorous individuals can be occasionally psychologically ill-equipped to face a difficult day of work. Thus, managers should attempt to be cognizant of employees' energy levels and delegate assignments accordingly. For instance, hospital intensive care unit nurses are normally assigned a group of patients to care for each day. Because of the severity of patients' illnesses or injuries (or for other reasons), certain groups of patients are naturally more difficult to care for than others. If a charge nurse recognizes that a generally enthusiastic nurse seems emotionally exhausted on a given day, he or she could assign this nurse a less demanding group of patients. In doing so, the charge nurse should reduce the risk that the drained nurse's depleted resource levels

will spiral into a vicious cycle of exhaustion, whereby the rate at which resources are depleted becomes consistently greater than the rate at which resources are replenished (Freedy & Hobfoll, 1994). Such “loss spirals” are dangerous because they can result in a level of chronic strain that is likely to eclipse the benefits of intrinsic motivation and decrease job performance (Lang, Thomas, Bliese, & Adler, 2007).

In addition to adjusting work assignments, managers would also be well-advised to encourage employees to invest time after work “recovering” from their job demands so that prework levels of emotional exhaustion do not hinder the ability of intrinsic motivation and other psychological resources to reduce subsequent emotional exhaustion levels. Several scholars have begun to study how individuals recover—or return functional systems used during a stressful experience to pre-stressor levels (Meijman & Mulder, 1998)—from the demands placed on them throughout the workday. Key to successful recovery is that individuals refrain from engaging in activities that involve the same functional systems or internal resources required to complete their work (Sonnentag & Fritz, 2007). Instead, individuals should psychologically detach from work, relax, or engage in learning opportunities that foster feelings of meaning and competence without overtaxing capabilities (Sonnentag & Fritz, 2007).

Of course, with today’s “always on” workforce, efforts to encourage typically motivated employees to disengage from work during off hours are likely to be met with some resistance. However, recent research finds that this resistance tends to fade once employees begin to realize the on-the-job benefits of time off, including increased performance, development of more efficient ways to complete job tasks, and enhanced communication among coworkers (Perlow & Porter, 2009). Off-the-job benefits, including better sleep quality and reduced fatigue, are also common when individuals engage in leisure activities (Sonnentag & Fritz, 2007). Thus, increasing employees’ awareness of these benefits may help to mitigate their initial concerns.

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