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Rise and shine: Recovery experiences of workaholic and nonworkaholic employees

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Due to their excessive drive to work hard, workaholics may face difficulties with recovering from work. The present study examines the role of negative emotions in recovery from work among a selected group of workaholics and nonworkaholics. Data were collected among 118 employees who completed a survey and participated in a 5-day diary study. Based on Effort-Recovery theory, we expected and found that negative emotions at the end of the workday hamper employees' recovery during the evening. Interestingly, this effect was stronger for workaholics than for nonworkaholics. It was also found that workaholics spend more time on work-related activities during the evening than nonworkaholics when feeling negative emotions at the end of the workday. Finally, it was expected and found that a lack of recovery experiences during the evening influences negative and positive emotions the next morning. Together, these findings suggest that, especially for workaholics, negative emotions play a crucial role in recovery from work. This insight may contribute to the design of interventions that stimulate recovery from work for workaholics.

Keywords: Diary study; Effort-Recovery Model; Emotions; Recovery experiences; Workaholism.

In recent years, work intensity has increased in Europe and in the US, meaning that many employees are facing a high work pace, tight deadlines, and insufficient time to complete their work (European Foundation for the Improvement of Living and Working Conditions, 2010). However, working hard is no problem as long as employees can recover from the effort spent at work. Sufficient recovery is an essential prerequisite for employee well-being (Sluiter, Frings-Dresen, van der Beek, & Meijman, 2001; Sonnentag, Binnewies, & Mojza, 2010). There are indications that workaholics have difficulties with recovering from work. Typically, workaholics have relatively few opportunities to recuperate from their demanding workday, which is exemplified by the fact that they suffer from work-to-family conflict and from feelings of exhaustion (Taris, Schaufeli, & Verhoeven, 2005). Due to their compulsive drive to work excessively hard (Schaufeli, Taris, & Bakker, 2008), workaholics spend much time and energy at work, leaving little time for doing other things and thus they neglect their need for recovery. The goal of the present study is to gain a better understanding of the recovery process among workaholics. More specifically, we examine the role that negative

emotions play in daily recovery experiences of workaholics versus nonworkaholics. Negative emotions can have an impact on an employee's behaviours and well-being (Brief & Weiss, 2002). Earlier research has shown that workaholic employees tend to experience more negative emotions than their nonworkaholic counterparts (Burke & Matthesen, 2004). It has been suggested that workaholics attempt to cope with their negative feelings by working excessively (Porter, 1996), which distinguishes them from nonworkaholics. We therefore examine emotions as antecedents and outcomes of daily recovery experiences among workaholics and nonworkaholics. For this purpose, we use a within-person daily diary approach that covers five consecutive workdays.

WORKAHOLISM

Ever since Oates (1968) coined the term “workaholism”, a debate continues about its origin and definition. For instance, some suggest that workaholism can be attributed to a combination of certain personality traits (Mudrack, 2004), whereas others think of it as learned addictive behaviour (Porter,

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1996). Most consensus exists about the notion that workaholics invest a considerable amount of time and energy to work (Harpaz & Snir, 2003; Scott, Moore, & Miceli, 1997; Spence & Robbins, 1992). However, not every employee who works hard is a workaholic; people may work hard for various reasons, such as deadlines and economical necessities (Ng, Sorensen, & Feldman, 2007; Taris et al., 2005). So, apparently it is not the number of hours they work, but their attitude towards work that distinguishes workaholics from nonworkaholics (Machlowitz, 1980). Apparently, workaholics do not work excessively because they enjoy their job, but rather because they feel they *have* to (van Beek, Hu, Schaufeli, Taris, & Schreurs, 2012). Furthermore, based on the Mood As Input (MAI) model (Martin, Ward, Archee, & Wyer, 1993), it can be assumed that workaholics work so hard because they use particular persistence rules for deciding on how long to continue with their work. Applied to the work setting, the MAI model, which was originally used in clinical psychology to explain compulsive behaviours, assumes that people intuitively use personal persistence rules when they are faced with task-related demands. Individuals may decide to continue working as long as they enjoy the task at hand (“enjoyment rule”), or until they feel that they have done enough (“enough rule”). Recently, van Wijhe, Peeters, and Schaufeli (2011) showed that workaholism is particularly associated with using the “enough” rule. This means that workaholics continue working because they constantly feel that they have not done enough yet, thereby ignoring the fact whether they like it or not. It seems that they have an inner drive that pushes them to work hard (Taris, Schaufeli, & Shimazu, 2010).

According to the review of Scott et al. (1997), workaholics are characterized by three aspects: (1) They tend to work long hours; (2) they frequently think about work, even when not at work, suggesting that they are obsessed with work; and (3) they work beyond what is reasonably expected from them, in order to meet organizational or economic requirements. As the final feature seems an extension of the first, Scott et al. actually seem to distinguish between a behavioural component (excess work) and a cognitive (work compulsion) component in workaholism. In a more recent review, Ng et al. (2007) state that workaholism is indeed characterized by cognition and behaviour, but also by affect. Ng et al. typified workaholics as those who are obsessed with working, commit long hours to work, and enjoy the *act* of working (but not the work itself). However, Porter (2001, p. 151) wrote earlier that “joy in work is not a part of workaholism viewed as an addiction”. Correspondingly, Mudrack (2006) argued that although some workaholics may enjoy their work, it

does not make enjoyment a core component of work addiction. For that reason, in accordance with Schaufeli, Taris, and Bakker (2008), we perceive work enjoyment as being an independent psychological phenomenon, called work engagement, which can be discriminated from workaholism (Taris et al., 2010). In general, workaholism is linked with negative outcomes, whereas work engagement is associated with positive outcomes (Schaufeli, Taris, & van Rhenen, 2008; Shimazu & Schaufeli, 2009). That is why we consider workaholism as inherently undesirable and work engagement as essentially desirable (Schaufeli, Taris, & Bakker, 2008). Altogether, we agree with the notion that workaholism is a combination of a behavioural and a cognitive component, and therefore define workaholism as “an irresistible inner drive to work excessively hard” (Schaufeli, Taris, & Bakker, 2008, p. 219).

As this definition states, workaholism is related to working long hours and to overtime work (Schaufeli, Bakker, van der Heijden, & Prins, 2009). The greater the amount of time spent at work, the less time is left for performing other roles (e.g., being a mother or partner). Although it is hard to draw conclusions about causality, this may be the reason for workaholics to experience work-to-family conflict (Bonebright, Clay, & Ankenman, 2000) and poor relationship quality (Bakker, Demerouti, & Burke, 2009). In addition, the compulsive work behaviour of workaholics is associated with poor health and well-being, such as subjective health complaints and exhaustion (Andreassen, Ursin, & Eriksen, 2007), low levels of happiness (Schaufeli, Bakker, et al., 2009), and high levels of distress (Schaufeli, Taris, & van Rhenen, 2008). In conclusion, it seems that workaholics allocate an excessive amount of time and energy to their work at the expense of having time for recovery.

RECOVERY FROM WORK

The Effort-Recovery Model (Meijman & Mulder, 1998) suggests that work effort draws upon one’s resources, which in turn may cause strain reactions. Under optimal circumstances, these strain reactions, such as fatigue and negative mood, are reversible. However, if no adequate recovery takes place, acute stress-related load reactions do not return to prestressor levels (Geurts & Sonnentag, 2006). In order to maintain a satisfactory performance level, the employee has to invest compensatory effort at the expense of psychological and physiological costs, thus imposing an extra demand on the recovery process (Hockey, 1997). Continuous exposure to high work demands and incomplete recovery may cause an accumulation of load reactions. This accumulative process hampers the recovery process, ultimately leading to chronic health impairment (Geurts & Sonnentag, 2006).

Adequate recovery typically leads to a restoration of depleted resources, such as an improved mood and higher energy levels (Sonnentag & Bayer, 2005) and a decrease in physiological strain (Geurts & Sonnentag, 2006). In order to recover, employees may engage in different types of leisure activities such as low effort activities (e.g., watching television), social activities (e.g., meeting friends), or physical activities (e.g., cycling) (Sonnentag, 2001). The mechanisms contributing to recovery are called *recovery experiences* and include psychological detachment from work, relaxation, and the experience of mastery and control during leisure time (Sonnentag & Fritz, 2007). The first two experiences—psychological detachment and relaxation—are linked with the Effort-Recovery Model, because they imply that no additional demands are imposed on one's resources that are called upon during work (Siltaloppi, Kinnunen, & Feldt, 2009). Therefore, in the current study, we specifically focus on these two mechanisms. Psychological detachment from work refers to the ability of individuals to mentally “switch off” from work (Sonnentag & Bayer, 2005) by not doing work-related tasks and not thinking about work during nonwork time (Sonnentag et al., 2010). Relaxation refers to feeling calm and peaceful, and is commonly related to reduced physical activation, for instance a decreased heart rate or lower muscle tension (Smith, 2005).

EMOTIONS AND RECOVERY FROM WORK

Research shows that inadequate recovery impairs mood (e.g., Sonnentag & Bayer, 2005; Totterdell, Spelten, Smith, Barton, & Folkard, 1995). However, very little research has addressed the role of emotions as *antecedents* of recovery. Since emotions may fluctuate from day to day (Miner, Glumb, & Hulin, 2005), we suggest that they may also be important for daily recovery experiences. First of all, we argue that for some individuals negative emotions may impede recovery. Negative emotions are usually sparked by an evaluation that an event is a threat or causes harm to personally relevant goals (Lazarus, 1991; Schwarz, 1990). As a consequence, people are inclined to change their bad mood into a better one (Isen, 1984). However, people use different strategies for changing negative emotions. For instance, some individuals might try to regulate their negative emotions by indulging in relaxing activities, whereas others keep busy (Gross, 1998; Thayer, Newman, & McClain, 1994). In a work context, this might imply that some employees who experience work-related negative emotions may engage in relaxing activities at home, such as taking a bath or listening to music, whereas others may stay mentally or physically involved in work. As a result of their increased work involve-

ment, the latter group might recover less. We expect that this mechanism specifically applies to workaholics. First, the MAI model (Martin et al., 1993) postulates that mood offers information for applying the “enough rule” that workaholics use as their norm for deciding on how long to continue working (van Wijhe et al., 2011). Since workaholics typically ask themselves whether they have done enough (i.e., applying the enough rule), a negative affective state may be interpreted as dissatisfaction with their performance and will stimulate them to remain behaviourally and mentally engaged in work tasks. Second, due to their competitive nature (Scott et al., 1997), workaholics feel anxious when they are deprived from competition during nonwork time. Furthermore, when having time off work, workaholics experience feelings of guilt (Spence & Robbins, 1992) and exhibit withdrawal symptoms (Porter, 1996). In other words, they feel uncomfortable not working. In order to escape their negative emotions, they stay mentally engaged in their work and may even “create” extra work during their hours off (Porter, 1996; Schaufeli, Shimazu, & Taris, 2009). However, by doing so, they further deplete their energy resources (Muraven & Baumeister, 2000). Therefore, we expect that negative emotions may cause workaholics to spend more time on work-related activities, and to have relatively fewer recovery experiences after their regular workday is over than nonworkaholics. In other words, negative emotions may have more detrimental effects on recovery for workaholics than for nonworkaholics.

Furthermore, we aim to demonstrate that recovery experiences during the evening are important for improving emotions the next morning. Using a weekly diary, Sonnentag, Mojza, Binnewies, and Scholl (2008) showed that psychological detachment during the workweek was related to both higher levels of positive emotions, as well as to lower levels of negative emotions at the end of the workweek. In another study, it has been shown that the experience of psychological detachment during the evening is negatively related to next morning's negative emotions (Sonntag, Binnewies, & Mojza, 2008). Since, to date, the latter study is unique in using daily diaries, we aim to replicate this general finding in a sample which includes hard-working employees.

To summarize, we hypothesize that workaholics recover less than nonworkaholics, both on a general (baseline) level as well as on a daily-level (H1). Furthermore, we hypothesize that, when controlling for previous day's level of time spent on work, *negative* emotions at the end of the workday are *positively* related to time spent by workaholics on work-related activities during the evening. For nonworkaholics we do not expect this relationship (H2). In addition, we hypothesize that, when controlling for previous day's level of recovery, *negative* emotions at the end of

the workday are *negatively* related to workaholics' recovery experiences during the evening, whereas for nonworkaholics we do not expect this relationship (H3). Finally, after controlling for the level of *negative* and *positive* emotions of the previous day, respectively, evening recovery experiences are hypothesized to be *negatively* related to next morning's *negative* emotions (H4) and *positively* related to next morning's *positive* emotions (H5).

METHOD

Participants and procedure

Data were collected from two samples of employees using an online questionnaire. The first sample consisted of employees of one faculty of a large Dutch university. In order to make sure that we would be able to include (also) participants with high scores on workaholism, a large sample of 726 staff members was approached for participation in a general study on working conditions. Three hundred and forty staff members responded (47%) by completing a questionnaire (Sample 1). The second sample (Sample 2) was a convenience sample that was recruited through a newspaper article on working exceptionally hard. Altogether, 691 employees responded by filling in a short questionnaire. To decrease the possible confounding impact of working hours on the relationships between emotions and recovery experiences, employees who worked less than 32 hours a week were removed from further analysis both in Samples 1 and 2, resulting in samples of 248 and 471 employees, respectively. These two samples were combined for the subsequent analyses ($n = 719$).

Next, from this large sample, a subsample consisting of workaholics and nonworkaholics was selected. For this purpose, cut-off scores were used based on the percentile scores of a large sample of the Dutch labour force ($N = 11,060$) (Schaufeli, van Wijhe, Peeters, & Taris, 2011) on two subscales of the Dutch Work Addiction Scale (Schaufeli, Shimazu, & Taris, 2009), that is, working compulsively (WC) and working excessively (WE). Participants were either categorized as having low (≤ 25 th percentile), average (26th–74th percentile), or high (≥ 75 th percentile) levels on both workaholism scales. Participants high on working compulsively *and* high on working excessively were classified as workaholic. The workaholic group ($n = 40$) and a randomly selected group of nonworkaholics (low or average scores on working compulsively and working excessively) ($n = 139$) were approached by email for taking part in the diary study. Ultimately, 30 workaholics and 88 nonworkaholics consented, yielding response rates of 75% and 63%, respectively. Participants were not informed of the exact purpose and inclusion criteria of the diary study. They were told that the

study was concerned with working hard and its relationship with well-being.

Analyses showed that for Sample 1, participants ($n = 49$) did not differ significantly from the group that refused participation ($n = 54$) with regard to age, $F(1, 101) = 0.11, p = .74$, gender, $\chi^2(1) = 0.00, p = .98$, negative emotions, $F(1, 101) = 0.17, p = .68$, positive emotions, $F(1, 101) = 0.00, p = .97$, recovery experiences, $F(1, 101) = 0.98, p = .35$, and workaholism, $F(1, 101) = 0.02, p = .90$, indicating that the groups were comparable in terms of demographics and all study variables. Considering that for Sample 2 the majority of the selected employees agreed to participate (91%), it was not possible to check for selective nonresponse, but at the same time not very likely to be a bias in our data.

The final diary sample consisted of 62 males (52.5%) and 56 females (47.5%), with a mean age of 41.6 years ($SD = 10.5$). More than two-thirds (71%) of the sample was married or living with a partner. Participants worked on average 45.6 ($SD = 8.9$) hours per week, including overwork. In terms of job tenure, participants worked on average 5.1 years ($SD = 4.4$) in their current job. A majority of the participants (60.2%) held at least a bachelors degree. In Sample 1, 89% was part of the scientific staff, whereas 11% was administrative support staff. Sample 2 consisted of participants working in a wide range of jobs (e.g., management assistants, consultants, and engineers).

Participants received instructions for completing the paper diaries either face-to-face or by telephone. They were invited to fill out the diary for five consecutive days (Monday to Friday), three times a day: (1) before work, (2) at 6:00 p.m. (the end of a regular workday), and (3) in the evening right before going to bed. Digital reminders were sent to participants around each diary moment. After 5 days, all participants returned the diaries. Altogether, participants completed a total of 590 daily diaries.

Measures

Baseline measures. For creating a workaholic and a nonworkaholic group, *baseline workaholism* was measured with the Dutch version (Schaufeli et al., 2011) of the short Dutch Work Addiction Scale (Schaufeli, Shimazu, & Taris, 2009). The first scale is Working Compulsively (WC; 5 items, $\alpha = .83$, an example item is "I feel that there's something inside me that drives me to work hard"). The second scale is Working Excessively (WE; 5 items, $\alpha = .73$, an example item is "I overly commit myself by biting off more than I can chew"). The WC scale is derived from the Drive scale of the Workaholism Battery (WorkBat; Spence & Robbins, 1992), whereas the WE scale is based on the Compulsive Tendencies scale of the Work Addiction Risk Test (WART;

Robinson, 1999). Both scales were rated on a 4-point scale (1 = “(almost) never”, 4 = “(almost) always”). Using the procedure described earlier, two groups were created (0 = nonworkaholic group, 1 = workaholic group).

Baseline negative and positive emotions were measured with two scales of the Job-related Affective Well-being Scale (JAWS; van Katwyk, Fox, Spector, & Kelloway, 2000) in its shortened Dutch version (Schaufeli & van Rhenen, 2006). *Baseline negative emotions* were measured using 7 negative affect items ($\alpha = .85$, e.g., “During my work, I feel angry”). One item (“guilty”) was added to the original 6-item scale, because of its importance for workaholism (Ng et al., 2007). *Baseline positive emotions* were assessed with 6 positive affect items ($\alpha = .88$, e.g., “During my work, I feel enthusiastic”). The participants responded to a 5-point Likert scale (1 = “(almost) never”, 5 = “(almost) always”).

Baseline work hours were measured by the item “How many hours per week do you work on contract?”

Baseline recovery experiences were measured by the scales Relaxation and Psychological Detachment from the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007). These scales were strongly correlated ($r = .62$), which also has been found in an earlier study (Siltaloppi et al., 2009). Due to this high correlation, a combined scale consisting of 8 items was used ($\alpha = .88$, e.g., “I use the time to relax”). The participants responded to a 5-point Likert scale (1 = “do not agree”, 5 = “totally agree”).

Day-level measures. For the daily measures, a selection was made of items of the baseline measures based on face validity and on consensus decisions among the authors. In order to fit a daily diary design, these items were transformed into short items that were easy to comprehend and that measured states instead of traits.

End-of-workday negative emotions were measured using 5 items: “anxious”, “angry”, “depressed”, “discouraged”, and “guilty” ($\alpha = .84$). All items originate from the Job Affective Well-being Scale (JAWS; van Katwyk et al., 2000), with the exception of “guilty”. Individuals were instructed to indicate the extent to which they felt each particular emotion “right now”.

Evening recovery experiences were measured with 4 items derived from the original 4-item subscales Relaxation and Psychological Detachment of the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007), which have been adapted for use in a diary study (Sonnentag, Binnewies, & Mojza, 2008). The items are: (1) “Tonight, I distanced myself from my work”, (2) “Tonight, I got a break from the demands of work”, (3) “Tonight, I kicked back and relaxed”, and (4) “Tonight, I used the time to relax” ($\alpha = .88$). The first two items refer to psychological

detachment, whereas the last two items refer to relaxation. The selection of the items was based on face validity.

For *evening work-related activities*, just before going to sleep, participants were asked to report the hours that they had spent on work after 6 p.m. during the same day, including working at home or preparing for the next working day. On average, participants engaged for about 0.73 hours ($SD = 1.19$) in work-related activities during the evening.

Morning negative emotions were assessed using the same items as were used for end-of-workday negative emotions. *Morning positive emotions* were assessed using 5 items: “at ease”, “energetic”, “happy”, “enthusiastic”, and “relaxed”. The reliabilities for morning negative and morning positive emotions were .83 and .87, respectively. Individuals were instructed to indicate the extent to which they felt each particular emotion “right now”.

Sleep quality was assessed in the morning survey with one single item: “Last night, I slept well”. This item was derived from the Sleep Quality scale of van Veldhoven and Meijman (1994). It was slightly adjusted to make it suitable for day-to-day measurement.

All day-level variables were scored on a 7-point scale (1 = “not at all”, 7 = “to a great extent”).

Data analyses

In order to test Hypothesis 1, we conducted separate Analyses of Variance (ANOVA's) with trait-level and day-level recovery experiences as dependent variables, respectively. Given the multilevel nature of our data, because days (Level 1; within-person variance) are nested in employees (Level 2; between-person variance), we used multilevel modeling with MLwiN software (Rasbash, Browne, Healy, Cameron, & Charlton, 2000) for testing Hypotheses 2 to 5. Multilevel models correct for hierarchical structures, and thus for interdependence of observations, that is due to repeated measurements of individuals. The person-level variables were centred on the grand mean, which is the mean of the whole sample, whereas the day-level variables were centred on the person mean, which is the mean of the individual. To avoid multicollinearity and estimation difficulties, we centred the group variable on the grand mean (Cohen, 2003).

In our multilevel analyses, we controlled for day of the week (ranging from 0 = Monday to 4 = Friday), gender (0 = male, 1 = female), sample (0 = Sample 1, 1 = Sample 2) and age. Furthermore, we controlled for the baseline level and for the previous day's ratings of the outcome variable involved. This allowed us to investigate daily fluctuations around the baseline of an individual and to examine an individual's daily changes in scores, respectively. Since sleep quality has been found to predict morning affect (Sonnentag, Binnewies,

& Mojza, 2008), we also controlled for the impact of sleep quality in these specific analyses.

In order to test Hypotheses 2 to 5, we started by calculating an intercept-only model (Null model). Next, in Model 1, we entered control and baseline variables. In Models 2 and 3, we entered those variables central to our hypotheses. That is, for predicting evening recovery experiences and work-related activities, we included the group variable (0 = nonworkaholic and 1 = workaholic) and end-of-workday negative emotions in Model 2, and in Model 3 we included the interaction term of negative emotions by group (Hypothesis 3). For predicting morning negative and positive emotions, we entered previous day's level of evening recovery experiences in Model 2 (Hypotheses 4 and 5, respectively).

We examined the significance of the parameters and compared the fit of each model to the previous one by calculating the difference between the log-likelihood values using a chi-square test.

RESULTS

Descriptive statistics

Table 1 shows the means, standard deviations, and correlations of all study variables. The majority of these correlations were significant at the $p < .05$ level.

Workaholics and recovery

First, we examined whether workaholics scored lower on recovery experiences than nonworkaholics (Hypothesis 1). The results of the first ANOVA showed that workaholics had significantly lower scores on trait level recovery experiences ($M = 2.42$, $SD = 0.58$) than nonworkaholics ($M = 3.32$, $SD = 0.51$), $F(1, 116) = 65.30$, $p < .001$. A second ANOVA using aggregated data showed that workaholics also scored significantly lower ($M = 4.16$, $SD = 1.12$) on day-level recovery experiences than nonworkaholics ($M = 4.88$, $SD = 0.90$), $F(1, 116) = 12.65$, $p = .001$. Therefore, Hypothesis 1 was confirmed.

Preliminary multilevel analyses

Compared to a one-level model, the two-level model with days nested within persons produced a significantly better model fit for work-related activities ($\Delta -2 \times \log = 25.32$, $df = 1$; $p < .001$), recovery experiences ($\Delta -2 \times \log = 36.98$, $df = 1$; $p < .001$), morning negative emotions ($\Delta -2 \times \log = 194.59$, $df = 1$; $p < .001$), and morning positive emotions ($\Delta -2 \times \log = 197.48$, $df = 1$; $p < .001$). In other words, the two-level model, that takes into account the hierarchical structure of the data, is superior to a single-level model. In order to determine to what extent employees showed day-to-day fluctuations on these variables, the within-person

TABLE 1
Means, standard deviations, and correlations between study variables

	Total (<i>n</i> = 118)		Non-WA (<i>n</i> = 88)		WA (<i>n</i> = 30)		1	2	3	4	5	6	7	8	9	10	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>											
1. Baseline work hours	37.32	3.95	37.92	3.09	35.52	5.46	—										
2. Baseline recovery experiences	3.09	0.66	3.32	0.51	2.42	0.58	.17	—									
3. Baseline negative affect	2.18	0.68	1.97	0.61	2.79	0.53	-.12	-.39	—								
4. Baseline positive affect	3.72	0.64	3.89	0.56	3.22	0.62	.11	.34	-.69	—							
5. End-of-day negative emotions	1.83	0.78	1.63	0.57	2.42	1.00	-.18	-.31	.53	-.41	—						
6. Evening work-related activities	0.73	1.11	0.73	1.13	0.72	1.06	-.09	-.02	-.06	.00	-.06	—					
7. Evening recovery experiences	4.70	1.00	4.88	0.90	4.16	1.12	.14	.42	-.46	.44	-.41	-.29	—				
8. Sleep quality—day-level	5.20	1.14	5.39	1.10	4.65	1.07	.14	.32	-.26	.19	-.26	-.04	.29	—			
9. Morning negative emotions	1.74	0.77	1.50	0.52	2.43	0.95	-.22	-.37	.59	-.45	.90	-.06	-.42	-.30	—		
10. Morning positive emotions	4.94	0.92	5.20	0.78	3.08	0.88	.10	.38	-.55	.55	-.62	-.01	.47	.49	-.70	—	

Day-level data is averaged across 5 days; $r \geq .19$ are significant at $p < .05$; $r \geq .26$ are significant at $p < .01$; $r \geq .33$ are significant at $p < .001$. *M* = mean; *SD* = standard deviation; Non-WA = nonworkaholics, WA = workaholics.

variance was calculated. It was shown that 21.2% of the variance in work-related activities, 25.7% of the variances in recovery experiences, 41.0% of the variances in morning negative emotions, and 59.4% of the variance in morning positive emotions was accounted for by within-person variability. All in all, it can be concluded that the use of multilevel analysis is justified.

End-of-workday negative emotions and evening work-related activities

Table 2 presents the results of multilevel analyses on evening work-related activities.

Model 1 (control model) fitted the data better than the Null model. Weekday was significantly related to evening work-related activities, suggesting that as the week unfolds, less time is spent on evening work-related activities. It is furthermore demonstrated in Model 2 that, when controlling for previous day's level of work-related activities,¹ negative emotions are positively related to time spent on work-related activities. This indicates that when feeling relatively high levels of negative emotions at the end of the day, our participants spent more time on work-related matters during the evening.

We expected that the relationship between negative emotions at the end of the workday and work-related activities should be particularly strong for workaholics (vs. nonworkaholics) (Hypothesis 2). In line with our expectations, Model 3 indicates a significant interaction between negative emotions and group on evening work-related activities. This interaction is plotted in Figure 1. In order to test the two-way interaction, a simple slope test was conducted (Aiken & West, 1991). The examination revealed that for workaholics, experiencing relatively more negative emotions was positively related to spending more time on work-related activities, $\gamma = 0.40$, $SE = 0.09$, $t = 4.39$, $p < .001$, whereas for nonworkaholic employees, negative emotions were *not* significantly related to time spent on work-related activities, $\gamma = 0.05$, $SE = 0.08$, $t = 0.66$, $p = ns$. Hence, Hypothesis 2 was confirmed. Model 3 demonstrates that the variables accounted for 9% of the within-person variance and 3% of the between-person variance in evening work-related activities.

End-of-workday negative emotions and evening recovery experiences

Table 3 shows the results of the analysis with evening recovery experiences as dependent variable. It was found that the fit to the data of Model 1 (control

¹ In all four analyses, the previous day's level of the outcome variable showed significant negative effects on the respective outcome variable. This seems to be indicative of a slight negative suppressor effect that should not be interpreted theoretically.

model) was significantly better than that of the Null model. Day of the week and gender were significantly related to recovery experiences, indicating that the level of recovery experiences increases as the week progresses and that women recover more effectively than men. Results further show that baseline recovery experiences were positively related to evening recovery experiences. Model 2, which included the main effects, showed a better fit to the data than Model 1. When controlling for previous day's level of recovery experiences, negative emotions at the end of the workday were negatively related to employees' recovery experiences in the evening. That is, the more negative emotions, the fewer recovery experiences an individual reported.

We anticipated that the negative relationship between negative emotions at the end of the workday and evening recovery experiences would be more pronounced for workaholics than for nonworkaholics (Hypothesis 3). Model 3 indeed showed a significant interaction between negative emotions and group on evening recovery experiences, which is displayed in Figure 2. Again, a simple slope test was conducted to examine the interaction (Aiken & West, 1991). Results indicated that for workaholics, negative emotions were negatively related to recovery experiences, $\gamma = -0.62$, $SE = 0.11$, $t = 5.43$, $p < .001$. For nonworkaholic employees, negative emotions were much less strongly, but still significantly related to recovery experiences, $\gamma = -0.21$, $SE = 0.10$, $t = -2.14$, $p < .05$. Therefore, Hypothesis 3 was partly supported. Altogether, Model 3 showed that the variables explained 9% of the within-person variance and 28% of the between-person variance in evening recovery experiences.

Evening recovery experiences and morning emotions

Tables 4 and 5 present the results of multilevel analyses of morning negative and positive emotions. Model 1 (control model) demonstrated significant improvement over the Null model for both morning negative emotions and morning positive emotions. Baseline negative affect was a significant predictor of morning negative emotions, whereas baseline positive affect was significantly related to morning positive emotions. In other words, the baseline levels are relevant for both negative and positive emotions in the morning. Finally, sleep quality negatively predicted morning negative emotions, indicating that poor sleep quality results in higher levels of morning negative emotions. Sleep quality was positively related to morning positive emotions, indicating that good sleep quality predicts higher levels of morning positive emotions.

Hypothesis 4 predicted that recovery experiences during the evening are negatively related to

TABLE 2
Multilevel estimates for models predicting evening work-related activities ($n = 118$ employees)

	Null model			Model 1			Model 2			Model 3		
	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	0.57	0.06	8.95***	1.10	0.16	6.83***	1.12	0.16	6.88***	1.06	0.16	6.45***
Time (weekday)				-0.17	0.04	-4.28***	-0.17	0.04	-4.36***	-0.17	0.04	-4.15***
Sample				-0.15	0.14	-1.08	-0.18	0.15	-1.17	-0.15	0.15	-1.00
Gender				-0.31	0.23	-1.31	-0.03	0.14	-0.18	-0.03	0.14	-0.22
Age				0.01	0.01	0.86	0.01	0.01	1.00	0.01	0.01	1.00
Baseline work hours				-0.03	0.02	-1.67	-0.03	0.03	1.10	-0.03	0.02	-1.42
Previous day work-related activities				-0.15	0.05	-2.92***	-0.14	0.05	-2.72**	-0.14	0.05	-2.78**
End-of-day negative emotions							0.16	0.08	1.96*	0.13	0.08	1.61
Group							0.09	0.16	0.58	-0.02	0.17	-0.11
Group × End-of-day negative emotions										0.30	0.12	2.48*
-2*log	1392.76			1352.47			1332.52			1326.48		
Diff -2*log				40.29			19.95			6.05		
<i>df</i>	1			6			2			1		
Level 1 within-person variance (<i>SE</i>)	0.94	0.07		0.89	0.07	5.75	0.87	0.07	7.45	0.85	0.07	9.05
Level 2 between-person variance (<i>SE</i>)	0.25	0.07		0.24	0.06	3.17	0.24	0.06	4.76	0.25	0.06	2.78

Null model = the intercept is the only predictor, Model 1 (M1) = null model + control variables, Model 2 (M2) = M1 + day-level and trait-level predictors, Model 3 = M2 + cross-level interaction. * $p < .05$, ** $p < .01$, *** $p < .001$. Time: 0 = Monday to 4 = Friday. Sample: 0 = Sample 1, 1 = Sample 2. Gender: 0 = male, 1 = female. Group: 0 = nonworkaholics, 1 = workaholics.

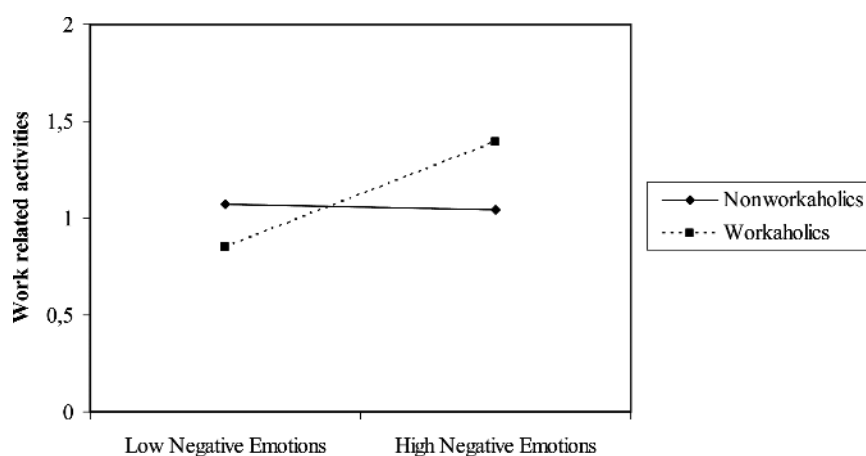


Figure 1. Interaction effect of group in the relationship between end-of-workday negative emotions and evening work-related activities.

subsequent morning negative emotions (see Table 4). Model 2 (full model), that included evening recovery experiences as a predictor of next day's negative emotions, showed a better fit to the data than Model 1. Thus, recovery experiences during the evening were negatively related to negative emotions in the morning; the more recovery experiences in the evening the fewer negative emotions the next morning. Therefore, Hypothesis 4 was supported. Moreover, Model 2 showed that the control and predictor variables explained 11% of the within-person variance and 39% of the between-person variance in morning negative emotions.

Finally, Hypothesis 5 asserted that recovery experiences during the evening are positively related to morning positive emotions (see Table 5). Model 2 (full model), with morning positive emotions as dependent variable, and evening recovery experiences as a predictor, fitted the data significantly better than the previous Model 1. A significant main effect of recovery experiences during the previous evening on morning positive emotions was shown; the more recovery experiences in the evening, the more positive emotions the next morning. Therefore, Hypothesis 5 was confirmed. Furthermore, the control and predictor variables explained 22% of the variance on the

TABLE 3
Multilevel estimates for models predicting evening recovery experiences ($n = 118$ employees)

	Null model			Model 1			Model 2			Model 3		
	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	4.75	0.09	52.15***	4.04	0.22	18.69***	4.03	0.21	18.83***	4.12	0.22	19.08***
Time (weekday)				0.16	0.05	2.96**	0.15	0.05	2.96**	0.15	0.05	2.94**
Sample				0.16	0.18	0.85	0.16	0.19	0.87	0.14	0.19	0.75
Gender				0.45	0.18	2.48*	0.45	0.18	2.46*	0.43	0.18	2.36*
Age				0.02	0.01	1.78	0.01	0.01	1.56	0.01	0.01	1.44
Baseline recovery experiences				0.63	0.13	4.82***	0.56	0.16	3.52**	0.53	0.16	3.31***
Previous day recovery experiences				-0.11	0.06	-1.93	-0.10	0.05	-1.93	-0.11	0.05	-2.04*
End-of-day negative emotions							-0.35	0.11	-3.25**	-0.31	0.11	-2.93**
Group							-0.19	0.24	-0.77	-0.09	0.24	-0.37
Group × End-of-day negative emotions										-0.41	0.16	-2.63**
-2*log	1647.82			1594.29			1576.72			1569.84		
Diff -2*log				53.52			17.57			6.88		
<i>df</i>	1			6			2			1		
Level 1 within-person variance (<i>SE</i>)	1.63	0.01		1.57	0.12	3.50	1.52	0.12	6.94	1.49	0.11	8.72
Level 2 between-person variance (<i>SE</i>)	0.56	0.13		0.40	0.11	29.31	0.40	0.11	28.95	0.41	0.11	27.89

Null model = the intercept is the only predictor, Model 1 (M1) = null model + control variables, Model 2 (M2) = M1 + day-level and trait-level predictors, Model 3 = M2 + cross-level interaction. * $p < .05$, ** $p < .01$, *** $p < .001$. Time: 0 = Monday to 4 = Friday. Sample: 0 = Sample 1, 1 = Sample 2. Gender: 0 = male, 1 = female. Group: 0 = nonworkaholics, 1 = workaholics.

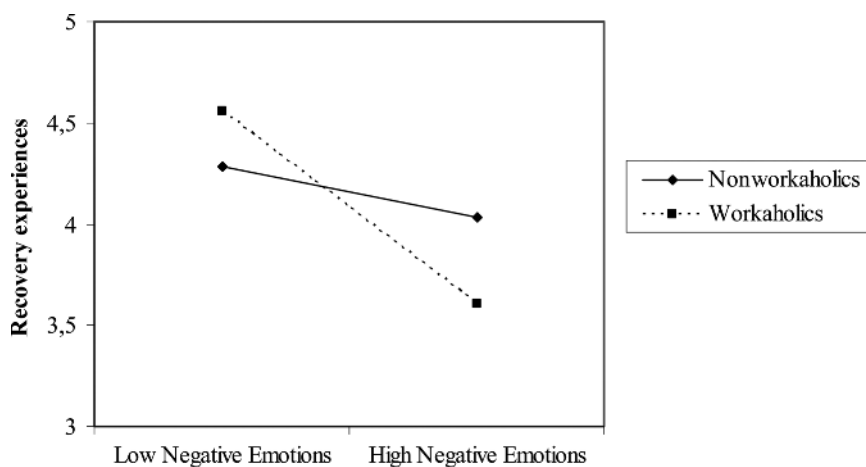


Figure 2. Interaction effect of group in the relationship between end-of-workday negative emotions and evening recovery experiences.

within-person level and 29% of the variance on the between-person level in morning positive emotions.

DISCUSSION

The aim of the current study was to examine the role of negative emotions in the recovery experiences of workaholics versus nonworkaholics. It was hypothesized that workaholics, when in a negative emotional state at the end of the workday, would spend more time on work during the evening than nonworkaholics. It was also predicted that workaholics, when

feeling bad at the end of the workday, would recover less than nonworkaholics during the evening. The findings mainly support our predictions. When workaholics experienced negative emotions at the end of the workday, they spent relatively more time on work and had fewer recovery experiences during the evening. For nonworkaholics, negative emotions at the end of the workday had *no* impact on the time spent on work-related activities, and showed less influence on their recovery experiences later that evening than for workaholics. Finally, we found that when employees (both workaholics and nonworkaholics) recovered

TABLE 4
Multilevel estimates for models predicting morning negative emotions ($n = 118$ employees)

	Null model			Model 1			Model 2		
	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	1.74	0.07	24.83***	1.78	0.12	14.69***	1.77	0.12	14.65***
Time (weekday)				-0.03	0.02	-1.04	-0.03	0.02	-1.04
Sample				-0.03	0.12	-0.24	-0.03	0.13	-0.24
Gender				0.05	0.13	0.42	0.06	0.13	0.47
Age				-0.01	0.01	-1.67	-0.01	0.01	-1.67
Baseline negative affect				0.64	0.09	7.27***	0.64	0.09	7.28***
Previous day morning negative emotions				-0.14	0.05	-2.75**	-0.15	0.05	-3.06**
Sleep quality				-0.12	0.03	-4.26***	-0.11	0.03	-4.22***
Previous evening recovery							-0.06	0.03	-2.48*
-2*log	1057.23			934.43			918.30		
Diff -2*log				122.80			16.13		
<i>df</i>	1			7			1		
Level 1 within-person variance (<i>SE</i>)	0.34	0.03		0.31	0.02	8.72	0.31	0.02	10.47
Level 2 between-person variance (<i>SE</i>)	0.50	0.08		0.30	0.05	39.60	0.30	0.05	39.39

Null model = the intercept is the only predictor, Model 1 (M1) = null model + control variables, Model 2 = M1 + day-level predictor. * $p < .05$, ** $p < .01$, *** $p < .001$. Time: 0 = Monday to 4 = Friday. Sample: 0 = sample 1, 1 = sample 2. Gender: 0 = male, 1 = female.

TABLE 5
Multilevel estimates for models predicting morning positive emotions ($n = 118$ employees)

	Null model			Model 1			Model 2		
	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	4.95	0.08	61.88***	4.91	0.49	10.01***	4.91	0.15	32.73***
Time (weekday)				-0.02	0.03	-0.65	-0.02	0.03	-0.67
Sample				0.13	0.16	0.86	0.13	0.16	0.81
Gender				-0.06	0.16	-0.39	-0.06	0.16	-0.38
Age				0.00	0.01	0.13	0.00	0.01	0.00
Baseline positive affect				0.75	0.12	6.38***	0.74	0.12	6.17***
Previous day morning positive emotions				-0.13	0.05	-2.63**	-0.14	0.05	-2.80**
Sleep quality				0.23	0.03	7.80***	0.23	0.03	7.67***
Previous evening recovery							0.07	0.03	2.33*
-2*log	1220.24			1051.45			1037.38		
Diff -2*log				168.79			14.07		
<i>df</i>	1			7			1		
Level 1 within-person variance (<i>SE</i>)	0.49	0.04		0.38	0.03	21.24	0.38	0.03	22.27
Level 2 between-person variance (<i>SE</i>)	0.71	0.11		0.49	0.08	30.32	0.50	0.08	29.48

Null model = the intercept is the only predictor, Model 1 (M1) = null model + control variables, Model 2 = M1 + day-level predictor. ** $p < .01$, *** $p < .001$. Time: 0 = Monday to 4 = Friday. Sample: 0 = sample 1, 1 = sample 2. Gender: 0 = male, 1 = female.

during the evening, they felt more recovered the next morning as indicated by higher levels of positive emotions and lower levels of negative emotions, beyond the effect of sleep quality.

Taken together, our findings imply that negative emotions felt at the beginning of the evening stimulates engagement in work-related activities and hampers the recovery experiences during the remaining evening, especially for workaholics. It seems that negative emotions have a different meaning for workaholics than for nonworkaholics as they lead to less effective recovery strategies. Given that

workaholics continue working because they often feel that they have not done enough yet (van Wijhe et al., 2011), they may respond more intensively to negative emotions, because for them these emotions signify that they did not complete enough work. A logical consequence is that workaholics spend additional hours working (Porter, 1996), which, in its turn, interferes with their recovery. According to the Effort-Recovery Model, inadequate recovery of work can lead to long-term health impairment (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998). We extended this model by showing that negative

emotions can be an impeding factor in effective recovery for workaholics. In addition, we demonstrated that the end-of-workday negative emotions of nonworkaholics do not seem to relate strongly to recovery during the evening, nor do they relate to work-related practices. Nonworkaholics also experience negative emotions at the end of the workday, but may feel less threatened by these feelings. Alternatively, they might feel stimulated by their negative emotions to withdraw from work and engage in additional activities, other than work, to regulate their emotions. As a result, nonworkaholics may disengage more easily from work when in a bad mood, and hence recover better. Remarkably, in the present study, workaholics and nonworkaholics did not seem to differ with regard to the number work hours. This may be explained by the fact that working long hours is a necessary, but not a sufficient hallmark of workaholism; people work long hours for a variety of reasons (Brett & Stroh, 2003; Douglas & Morris, 2006), such as earning enough money to meet one's needs or avoiding stress associated with family life. It is the combination of working excessively and compulsively that defines workaholism (Schaufeli, Taris, & Bakker, 2008).

The finding that recovery experiences during the evening are related to a decrease in negative emotions and an increase in positive emotions the next morning emphasizes the importance of strategies to replenish resources during the evening. This result is roughly in line with earlier findings that demonstrated a relationship between evening recovery experiences (psychological detachment) and next's morning negative emotions (Sonnentag, Taris, & Bakker, 2008). A novel finding of our study is that daily recovery experiences are related to general levels of positive emotions the next morning. In the study of Sonnentag, Taris, and Bakker (2008), it was found that, rather than detachment or relaxation, mastery experiences and sleep quality predicted next morning's active positive emotions (e.g., "alert", "excited"). In addition, they demonstrated that relaxation was related to next morning's serenity, which is a specific positive affective state characterized by low arousal (e.g., "calm", "relaxed"). However, the current results indicate that recovery experiences essentially contribute to next morning's general level of positive emotions. More specifically, we found that recovery experiences predict next morning's negative and positive emotions beyond the effect of sleep quality. In other words, sleep quality is important for recovery, but there seem additional ways to recover in terms of positive and negative emotions.

All in all, our results show that workaholics spend more time on work and have fewer recovery experiences during the evening when feeling negative emotions at the end of the workday than nonworka-

holics. In line with the Effort-Recovery Model (Meijman & Mulder, 1998), this suggests that especially workaholics find it difficult to mentally and physically abstain from work demands when being in a bad mood. Furthermore, a lack of recovery experiences during the evening, in its turn, leads to incomplete recovery, suggesting that feelings of complete relaxation and detachment are important for replenishing one's resources. In other words, workaholics may put themselves at risk for resource loss because their negative emotions hamper investment in new resources by means of recovery experiences.

Strengths, limitations, and suggestions for future research

A strong point of the current study is that it provides insight into how within-person processes influence daily recovery processes of workaholics in contrast to nonworkaholics. Compared to between-person studies, within-person studies on workaholism are scarce (cf. Snir & Zohar, 2008; Bakker, Oerlemans, & Sonnentag, 2011, for exceptions). Another important strength of our study is that all analyses were adjusted for the linear effect of consecutive days on the outcome variables. Also, in order to account for third variables that influence both predictor and outcome variables (e.g., stable individual-differences), we controlled for baseline levels and previous day's level of the outcome variable, which were generally found to be important in predicting the outcome variables. Despite this rather conservative strategy of controlling for a wide range of variables, the hypothesized associations remained, thus demonstrating the robustness of the effects.

Another interesting feature of the current study is that "real" workaholics (i.e., those with high scores on the workaholism scale) were contrasted with nonworkaholics (i.e., those with average or lower scores on workaholism). Instead of using a median split, cut-off points that are based on a national sample were used to identify real workaholics. This allowed us to straightforwardly examine how workaholics and nonworkaholics differ with regard to affective variables, time spent on work-related activities, and recovery experiences. A problem with this method is that it may increase the likelihood of regression to the mean (Preacher, Rucker, MacCallum, & Nicewander, 2005). Despite this tendency, however, our study produced significant results in the expected direction.

An important limitation of the current study is that it does not address the root causes of the end-of-workday emotions for workaholics. However, it was demonstrated that for workaholics negative emotions at the end of the workday predict time

spent on work-related activities and recovery experiences, thereby explicitly demonstrating the consequences of negative emotions. Nonetheless, future research on the origin of negative emotions among workaholics could provide interesting insights.

A second point of potential concern is that the use of only self-reports may have biased the results due to common method variance (CMV), which could have led to artificially inflated relationships between variables (e.g., response styles) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, Siemsen, Roth, and Oliveira (2010) show that CMV is less problematic in more complex estimations that entail multiple independent variables. When a large number of measured variables is included, as in our study, common method bias in regression slope estimates decreases and is ultimately eliminated. Moreover, Siemsen et al. demonstrate that finding significant interaction effects in the data set should be considered as strong evidence that an interaction effect actually exists, since CMV rather causes a deflation of the estimated interaction effect. Finally, at the suggestion of Podsakoff et al. (2003), to reduce potential method bias, we separated the measurement of the predictor and criterion variables by administering diary questionnaires at different time points during the day. Altogether, we therefore do not expect that method bias had a profound impact on the results of this study.

A final limitation is that, although we found support for the assumption that negative emotions cause workaholics to spend more time on work and hamper their daily recovery experiences, the study does not specifically show *how* emotions operate in this process. For example, it does not answer questions like “Do negative emotions particularly prompt workaholics to ruminate about work?” Workaholism has been linked to neuroticism (Andreassen, Hetland, & Pallessen, 2010) and rumination about work (Snir & Zohar, 2008). We cannot account for the fact that neuroticism or worry might explain the lack of recovery for workaholics. We also did not examine what other activities, besides work, people exactly performed during the evening that facilitated or hindered the recovery experiences. Additional research that takes into account rumination, off-job activities, as well as recovery experiences is needed to better understand how negative emotions impede recovery experiences for workaholics.

An interesting direction for future research is to compare the recovery process of workaholics to that of work engaged employees. There is accumulating evidence that the underlying psychological mechanisms that drive these two types of employees differ fundamentally (cf. van Beek, Hu, et al., 2012). Whereas in the present study it was found that negative emotions hamper recovery experiences for

workaholics, it is possible that negative emotions facilitate recovery experiences for work engaged employees. In an earlier study (van Wijhe et al., 2011), it was demonstrated that, in contrast to workaholics, work engaged employees typically use an “enjoyment rule” to determine work perseverance, meaning that they continue as long as they enjoy working. Seen from this perspective, negative emotions may act as a signal for work engaged employees that they no longer enjoy their work anymore, denoting that it is time to quit. In addition, it would be interesting to examine the effect of work engagement on recovery experiences for workaholics. A study of van Beek, Taris, and Schaufeli (2011) shows that work engagement buffers against the adverse effects of workaholism on burnout. Apparently, work engagement renders workaholics less vulnerable for inadequate recovery from work. Future diary research may examine these assumptions by including a subsample of engaged employees, or at least a measure of work engagement.

A related topic for further elaboration is the conceptualization of workaholism in general. In our view, by defining workaholism as having an irresistible inner drive to work excessively hard, we returned to the origin of the concept: workaholism as a negative obsessive work pattern (Oates, 1968). Still, we agree that it would be interesting to examine how the different conceptualizations of workaholism relate to each other. Future research could include other validated measures of workaholism, such as the Workaholism Battery (WorkBAT; Spence & Robbins, 1992) and the Work Addiction Risk Test (WART; Robinson, 1999).

Implications for practice

Our results may have relevant implications for practitioners. Since negative emotions relate to perseveration with work-related activities and hamper recovery experiences for workaholics, it seems important to find ways for effectively regulating and reducing negative emotions for workaholics. Elsewhere, we argued that the basic tenets of the Rational Emotive Behaviour Therapy (REBT; Ellis, 1995) may be useful for the treatment of workaholics by health professionals (van Wijhe, Schaufeli, & Peeters, 2010). REBT can be used to uncover the irrational beliefs that underlie the workaholics’ negative emotions, and to teach how to counteract maladaptive emotions and irrational cognitions. Relaxation training is another cognitive-behavioural method that might be helpful to workaholics as it increases awareness of tension and helps them to undo their negative emotions by stimulating positive feelings (Chen, 2006). Finally, time management training could help workaholics to

gain conscious control over their time schedule by setting realistic goals and prioritizing tasks, so that they can better decide when it is time to stop working at the end of their workday.

In conclusion, the current article highlights the importance of negative emotions for the work behaviour and associated recovery of workaholics. Studies on the affective experiences of workaholics are in short supply and usually employ retrospective reports of mood. Therefore it is interesting to examine recovery processes of workaholics from a daily perspective, using reports of momentary recovery experiences. For now, it seems that experiencing negative emotions at the end of the workday may be an important obstacle for workaholics to distance themselves from work and recover during the evening which prevents them from rising and shining the next morning.

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