Psychological detachment from work during non-work time: linear or curvilinear relations with mental health and work engagement?

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Received May 19, 2015 and accepted January 12, 2016 Published online in J-STAGE January 30, 2016

Abstract: This study examined whether a higher level of psychological detachment during non-work time is associated with better employee mental health (Hypothesis 1), and examined whether psychological detachment has a curvilinear relation (inverted U-shaped pattern) with work engagement (Hypothesis 2). A large cross-sectional Internet survey was conducted among registered monitors of an Internet survey company in Japan. The questionnaire included scales for psychological detachment, employee mental health, and work engagement as well as for job characteristics and demographic variables as potential confounders. The hypothesized model was tested with moderated structural equation modeling techniques among 2,234 respondents working in the tertiary industries with regular employment. Results showed that psychological detachment had curvilinear relations with mental health as well as with work engagement. Mental health improved when psychological detachment increased from a low to higher levels but did not benefit any further from extremely high levels of psychological detachment. Work engagement showed the highest level at an intermediate level of detachment (inverted U-shaped pattern). Although high psychological detachment may enhance employee mental health, moderate levels of psychological detachment are most beneficial for his or her work engagement.

Key words: Psychological detachment, Mental health, Structural equation modeling, Work engagement, Curvilinearity

Introduction

In recent years, scholars have argued that not only on-

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job experiences (how employees spend their working time) but also off-job experiences (how they spend their private or leisure time) are crucial for understanding employee well-being¹⁾. More specifically, better knowledge of off-job recovery from the demands experienced during working time is imperative²⁾. Recovery can be defined as a process during which individual functional systems that have been

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called upon during a stressful experience return to their initial, pre-stressor level³⁾. Recovery can be regarded a process opposite to the strain process, during which the detrimental effects of stressful situations are alleviated or eliminated. Recovery is also regarded as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment⁴⁾. Certain experiences outside of work can help in alleviating reactions to work demands^{5–7)}. These so-called recovery experiences consist of psychological detachment, relaxation, mastery, and control⁸⁾. Psychological detachment; i.e., the ability of individuals to mentally "switch off" from work by not doing work-related tasks and not thinking about work during non-work time, is considered the most crucial recovery experience for protecting one's well-being regarding job-related recovery^{2, 9)}.

In the context of respites from work, detachment has been described as an "individual's sense of being away from the work situation" Psychological detachment has been further characterized as not being involved in work-related activities, such as phone calls, e-mails, or other work-related tasks, during off-work time⁸. Psychological detachment from work extends beyond the pure physical absence from the workplace during off-job time and abstaining from job-related tasks. It implies leaving the workplace behind oneself in psychological terms¹¹.

The relation between psychological detachment and well-being can be explained by COR theory¹²⁾ and the Effort-Recovery Model³⁾. Conservation Of Resources (COR) theory asserts that an individual aspires to preserve, protect, and build resources. Resources are characterized as objects, conditions, personal characteristics, or energies that have specific importance for the individual. According to COR theory, stress occurs when individuals are threatened with resource loss, actually lose resources, or fail to gain resources following resource investment. The inability to replenish energy resources may lead to longterm fatigue, which hampers normal functioning in many aspects in daily life, including work. Thus, to recover from stress, individuals have to gain new resources and restore threatened or lost resources. Psychological detachment can contribute to gaining new resources and restore threatened or lost resources.

The Effort-Recovery Model³⁾ holds that effort expenditure at work leads to load reactions such as fatigue or physiological activation. Load reactions can accumulate and lead to impaired health and well-being, unless individuals can recover from work. By no longer being exposed to jobrelated demands, load reactions can return to pre-stressor levels, and recovery can occur before the next working

period starts. This implies that recovery strategies such as psychological detachment during off-work time can be an opportunity to return to and stabilize at a baseline level. Thus, both the Effort-Recovery Model and COR theory suggest two complementary processes by which recovery occurs. First, it is important to refrain from work demands and to avoid activities that call upon the same functional systems or internal resources as those required at work. Second, gaining new internal resources such as energy, self-efficacy or positive mood will additionally help to restore threatened resources⁸⁾.

Previous studies that examined the relation between psychological detachment and well-being have revealed that psychological detachment is positively associated with mental health and negatively associated with job stress and burnout^{6, 8, 11, 13, 14)}. Therefore, we expect that a higher level of psychological detachment during non-work time will be associated with better mental health (Hypothesis 1).

Regarding positive aspects of employee well-being, the present study focuses on work engagement, which refers to a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption¹⁵⁾. Previous studies have shown that psychological detachment is positively associated with work engagement^{16–18)}, because detachment may contribute to the prevention of continued resource drain and restoration of resources¹⁸⁾. If employees do not unwind from one's work, depleted resources can lead to low work engagement. Thus, we can assume that low levels of psychological detachment are associated with low work engagement.

However, the relation between psychological detachment and work engagement appears to be more complex. For instance, Shimazu *et al.* ¹⁹⁾ showed a negative relation between these variables, suggesting that switching off mentally during off-job time did not improve work engagement, but rather decreased it. When individuals are highly detached from their jobs during off-job time, they may feel difficulty in "switching on" again in the next morning¹⁴⁾, and they may need more time to mobilize their energy for their job, which results in impaired work engagement.

These findings suggest that (very) low and (very) high levels of psychological detachment will be detrimental to work engagement. As a result, moderate levels of psychological detachment will be associated with the highest levels of work engagement. All these findings imply non-linear rather than linear relations between detachment and work engagement, which is in line with Warr's (1994) assumptions on work²⁰, mental health and well-being. Accordingly, we expect that psychological detachment will

have a curvilinear relation (inverted U-shaped pattern) with work engagement (Hypothesis 2).

Method

Study population

An Internet research company with 1.5 million registered research volunteers aged 20-69 years, was used to conduct a large Internet-based cross-sectional survey on occupation, health and well-being in 2011. We randomly selected 106,250 volunteers from 201,170 monitors, living in three greater metropolitan areas of Japan (23 wards of Tokyo, the City of Osaka, and the City of Nagoya). On March 25, 2011, the selected volunteers were invited to take part in the study via an e-mail containing a link to the survey. Participants received online shopping points as an incentive for participation. In order to prevent double registration, e-mail addresses were checked and a link to the questionnaire was disabled once the survey was completed. On March 31, 2011, the survey was closed when more than five thousand participants responded (a total of 5,860 surveys were collected). Therefore, a specific response rate could not be calculated for this survey.

Our respondents were very close to the people living in 23 wards of Tokyo, the City of Osaka, and the City of Nagoya in terms of mean age (45.2 years in our respondents, 43.9 in Tokyo, 44.8 years in Osaka, and 43.8 years in Nagoya), gender (50.8% in our respondents, 50.7% in Tokyo, 51.5% in Osaka, and 50.7% in Nagoya), and employment status (46.5% regular employment in our respondents, 46.1% in Tokyo, 46.2% in Osaka, and 50.1% in Nagoya). However, our respondents had higher educational level (40.9% undergraduate or higher) than those living in Tokyo (33.2%), in Osaka (20.8%), and in Nagoya (26.0%)^{21,22}.

In our respondents, the proportion of respondents working within primary industries (e.g., agriculture, forestry, and fisheries) and secondary industries (e.g., mining, manufacturing, and constructions) was extremely low (0.1% and 7.6% respectively). Therefore, we analyzed responses only from those individuals working in tertiary industries (e.g., transport and postal activity, wholesale and retail trade, accommodations, eating and drinking services, finance and insurance, advertising, education and learning support, and medical, health care and welfare). Individuals with a reported age of either <20 years or \geq 65 years, those with non-regular employment, or shift workers were excluded ^{23–25)}. A total of 2,234 participants were retained and included in the analysis. The mean age of the participants was 41.7 years (SD=11.3). Of the participants,

63.9% were male, 54.4% were married, 55.9% had a university degree or higher, and 12.2% worked more than 60 hours per week.

Measures

Psychological detachment

Psychological detachment was assessed using the corresponding subscale of the Japanese version of the Recovery Experience Questionnaire^{8, 19)}, consisting of four items (i.e., "I forget about work," "I don't think about work at all," "I distance myself from my work," and "I get a break from the demands of work"). All items were scored on a five-point Likert scale, ranging from 1 (do not agree at all) to 5 (fully agree). Responses for the 4 items were summed to get a scale score. Cronbach's alpha coefficient was .86.

Mental health

Mental health was assessed using the corresponding subscale of the SF-36 version 1.2^{26-28} , consisting of five items (i.e., "Have you been a very nervous person?", "Have you felt so down in the dumps that nothing could cheer you up?", "Have you felt calm and peaceful? (reversed)", "Have you felt downhearted and blue?", and "Have you been a happy person? (reversed)"). All items were scored on a six-point Likert scale, ranging from 1 (all of the time) to 6 (none of the time). We used the SF-36 mental health summary score as a measure of mental health (Range: $0-100)^{29}$). Cronbach's alpha coefficient was .84.

Work engagement

Work engagement was assessed using the short form of the Utrecht Work Engagement Scale (UWES)¹⁵⁾, which has been validated in Japan³⁰⁾. The UWES includes three subscales that reflect the underlying dimensions of engagement: Vigor (3 items; e.g., "At my job, I feel strong and vigorous"), Dedication (3 items; e.g., "I am enthusiastic about my job"), and Absorption (3 items; e.g., "I am immersed in my work"). All items are scored on a seven-point Likert scale ranging from 0 (never) to 6 (always). Responses for the 3 items each were summed to get a scale score. Cronbach's alpha coefficients were .87 for vigor, .84 for dedication, and .86 for absorption.

Potential confounders

We controlled for two types of potential confounders; i.e., (1) job characteristics and (2) demographic characteristics. Their relation with detachment and our outcome measures is well-established in the literature^{4, 9, 11}).

Job characteristics were assessed using three scales of

the Brief Job Stress Questionnaire (BJSQ³¹⁾): job demands, job control and workplace support. The first two scales consisted of 3 items each, for instance "My job requires working hard" and "I have influence over the pace of my work". Workplace support consisted of 6 items: 3 items for supervisor support and 3 items for coworker support. To receive a more parsimonious model and to avoid multi-collinearity, we combined the two subscales in overall workplace support due to a high bivariate correlation (r=0.59; p<.001). All items were scored on a four-point Likert scale, ranging from 1 (disagree) to 4 (agree). Cronbach's alpha coefficients were .81 for job demands, .85 for job control, and .86 for workplace support.

Demographic characteristics such as age, gender, marriage, education, and working hours per week were also included as potential confounders in the questionnaire.

Data analyses

To test the hypotheses, we conducted moderated structural equation modeling (MSEM) analyses, using the AMOS software package³²⁾. We preferred MSEM to hier-

archical regression analyses, because MSEM allows multivariate testing of outcomes, allows assessing and correcting for measurement error, and provides measures of fit of the models under study. We followed the procedure proposed by Mathieu et al. 33) as described by Cortina et al. 34). Linear psychological detachment and mental health had only one indicator that was the standardized (centered) scale score of the respective factor³³). The indicator of the latent curvilinear psychological detachment was the squared term of the standardized (centered) scale score of psychological detachment. Work engagement had three indicators (i.e., vigor, dedication, and absorption). Correlation between linear psychological detachment and curvilinear one was constrained to be zero, whereas mental health and work engagement were allowed to correlate. The paths from the latent exogenous factors to their indicators were fixed using the square roots of the scale reliabilities, and the error variances of each indicator were set equal to the product of their variances and 1 minus their reliabilities. See Fig. 1 for our hypothesized model. For more details regarding the calculation of the reliability score of the curvilinear term,

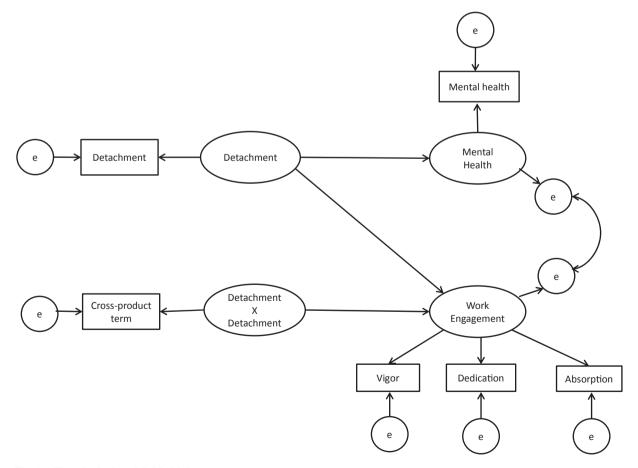


Fig. 1. Hypothesized model (Model 1).

Note: e=error.

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we refer to Cortina et al. 34).

The fit of the models was assessed with the chi-square statistic, the goodness-of-fit index (GFI), the comparative fit index (CFI), the non-normed fit index (NNFI), and the root-mean-square error of approximation (RMSEA). It is suggested that GFI, CFI, and NNFI values that exceed .90 and RMSEA values as high as .08 are indicative of acceptable fit³⁵⁾.

Ethics statement

This study was approved by the medical/ethics review board of the Japan Labour Health and Welfare Organization and The University of Tokyo medical department.

Results

Simple statistics

Zero-order correlation coefficients are shown in Table 1. Psychological detachment was positively correlated with mental health (r=.22, p<.001), and negatively correlated with vigor (r=-.04, p<.05), dedication (r=-.06, p<.01), and absorption (r=-.14, p<.001).

Results of MSES analyses

Results of the MSEM-analyses showed that the hypothesized model (Model 1) fits to the data ($\chi^2(8)$ =236.72, p<.001, GFI=.97, NNFI=.93, CFI=.96) although RMSEA value exceeded .08 (RMSEA=.11). In line with Hypothesis 1, linear psychological detachment was positively related to mental health (β =.24, p<.001). As to Hypothesis 2, both linear and curvilinear psychological detachment were negatively related to work engagement (β =-.10, p<.001 and β =-.06, p<.01, respectively).

To ensure that no curvilinear relation existed between psychological detachment and mental health in addition to linear one, we examined the alternative model that adds the path from curvilinear psychological detachment to mental health. The model fit of the alternative model (Model 2: $\chi^2(7) = 216.11$, p < .001, GFI=.97, NNFI=.92, CFI=.97, RMSEA=.12) was similar to one of the hypothesized model. However, the chi-square difference test, comparing the hypothesized model (Model 1) with the alternative model (Model 2), shows a significant improvement in model fit $(\Delta \chi^2(1) = 20.61, p < .001)$. This means that the alternative model (Model 2), including the path from curvilinear psychological detachment to mental health, offers a better account of the data than the hypothesized model (Model 1). Therefore, we decided to adopt the alternative model (Model 2) in further examination.

9 **90 6 30*** 30*** Fable 1. Descriptive statistics for the key study variables (N=2,234)Working hours (per week)^d Psychological detachment Workplace support Variable Mental health lob demands lob control Dedication Absorption 3ducation^c Marriage^r

Note: *p < .05 **p < .01 ***p < .001. SD: Standard Deviation. a Gender was coded as 1 (men) and 0 (women). b Marriage was coded as 1 (yes) and 0 (no). c Education was coded as 1 (university or higher) and 0 (college or lower). ^d Working hours per week was coded as 1 (60=<) and 0 (<60)

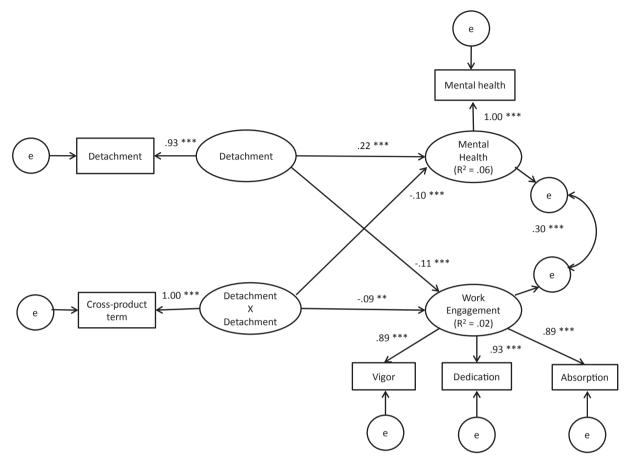


Fig. 2. Standardized solution (Maximum Likelihood estimates) of the final (alternative) model (Model 2: N=2,234). Note: e=error. ***p<.001, **p<.01, *p<.05.

As can be seen in Fig. 2, linear psychological detachment was significantly and positively related to mental health (β =.22, p<.001) whereas curvilinear psychological detachment was also significantly but negatively related to it (β =-.10, p<.001). In addition, both linear and curvilinear psychological detachment were significantly and negatively related to work engagement (β =-.11, p<.001 and β =-.09, p<.01, respectively). Please note that the results regarding the curvilinear relationship between psychological detachment and work engagement were similar in all three sub dimensions of the construct (i.e., vigor, dedication, and absorption).

Regarding the curvilinear relation between psychological detachment and mental health, Fig. 3 shows that initially there is a positive relation: more detachment is associated with better mental health. However, at high levels of psychological detachment, the positive relation between psychological detachment and mental health became less prominent, and even seems to disappear. Mental health did not increase further and remained at a high level.

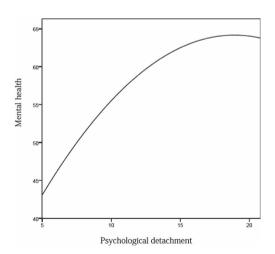


Fig. 3. Curve-fitting between psychological detachment and mental health.

With regard to the curvilinear relation between psychological detachment and work engagement, Fig. 4 shows that moderate levels of psychological detachment were associated with the highest levels of work engagement, whereas

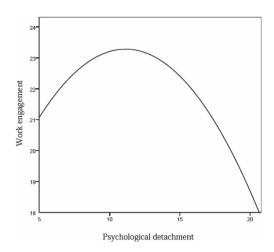


Fig. 4. Curve-fitting between psychological detachment and work engagement.

very low and very high detachment were associated with lower levels of work engagement (i.e., inverted U-shaped pattern).

In a final step, we conducted additional analysis to control for potential confounders (i.e., age, gender, marriage, education, working hours, job demands, job control, and workplace support). Specifically, each control variable was included in the alternative model (Model 2) as a manifest variable simultaneously and was allowed to relate to all variables in the model. After controlling for confounding variables, the path coefficients were virtually the same as those of the alternative model (Model 2), but the model fit decreased (χ^2 (35)=1538.06, p < .001, GFI=.91, NNFI=.53, CFI=.82, RMSEA=.14). These results indicate that the added relations of the control variables to the model variables were weak. Importantly, many control variables did not significantly affect the structural paths in the model (i.e., 18 out of 48 paths were not statistically significant). Therefore, the control variables were removed from the final model in Fig. 2.

Discussion

The aim of this large cross-sectional Internet survey study was to examine whether higher levels of psychological detachment during non-work time would be associated with improved employee mental health (Hypothesis 1). We also examined whether psychological detachment would have a curvilinear relation (i.e., inverted U-shaped pattern) with work engagement (Hypothesis 2). Examination of the curvilinear relation was novel, because prior research on the function of psychological detachment on work engagement is inconsistent in this respect^{16–19}).

As far as the relation between psychological detachment and mental health is concerned, MSEM revealed that not only linear psychological detachment (β =.22, p<.001) but also curvilinear detachment ($\beta = -.10$, p < .001) was significantly related to mental health. This result was contrary to our expectation. Examining Fig. 3, the positive relation between psychological detachment and mental health flattened after higher levels of psychological detachment. This pattern of findings suggests that mental health initially improves when people psychologically detach. However, employee mental health does not benefit any further from extremely high levels of psychological detachment. It is important to note that mental health does not suffer at such very high levels of psychological detachment. Although most previous studies showed that higher levels of psychological detachment during non-work time were associated with better employee mental health^{6, 8, 11, 13)}, our result suggests that the favorable effect of psychological detachment may have an upper limit on mental health, at least among our participants. Future research needs to examine under which conditions and for whom psychological detachment has such a curvilinear relation with mental health.

As to the relation between psychological detachment and work engagement, we also found a curvilinear relation. Moderate levels of psychological detachment were associated with highest levels of work engagement, whereas very low and very high psychological detachment was associated with lower levels of work engagement (i.e., inverted U-shaped pattern). Very low levels of psychological detachment may drain one's resources and inhibit resource restoration, whereas very high levels of psychological detachment may require a longer time to get back into "working mode" in the next morning⁹⁾. These may negatively impact work engagement, particularly at high levels of detachment. Finally, it is worth noting that the curvilinear relation between psychological detachment and work engagement resembles (albeit at a weaker level) a previously found relation between psychological detachment and job performance in earlier research¹⁴⁾. Given that both of these are more strictly work-related variables, the current finding may have implications for future research on the topic.

Limitations and suggestions for future research

Next to several strengths such as a large sample size and sufficient study power, there are also several limitations of this study. First, we used self-report survey data. Self-report measures may be biased due to, for example, negative affect. Common method variance might have affected the results, suggesting that the true associations between

variables might be weaker than those observed in this study. Although several studies have shown that these influences are not as high as could be expected^{36–38)}, our findings should be replicated using more objective measures (e.g., peer-ratings of mental health and work engagement) in the future.

Second, we used a cross-sectional study design, which precludes making causal inferences. For instance, our data showed that psychological detachment was related to better mental health. This might indicate that more psychological detachment leads to better mental health. It might also be that individuals enjoying better mental health are more likely to detach themselves from their work. Based on the cross-sectional analyses of the current study, it can only be concluded that psychological detachment is related to mental health and well-being. More longitudinal research is needed to uncover the causal sequence in the relation between psychological detachment and its consequences. However, it should be noted that there is a growing body of literature that demonstrates longitudinal effects of psychological detachment on health and well-being, particularly at day-level^{39–42)}. They support our causal inferences from both theoretical and empirical viewpoints.

Third, our data were collected from people living in three greater metropolitan areas of Japan (23 wards of Tokyo, the City of Osaka, and the City of Nagoya), which requires caution regarding the generalizability of our findings. Our sample may not represent other working populations quite well. Therefore, further studies are necessary to examine whether our results are applicable to workers in local areas.

Fourth, our data were collected via the Internet, which again requires caution regarding the generalizability of our findings. It has been claimed that the socioeconomic and educational status of the average Internet user is usually greater than that of the general population⁴³. Indeed, our participants reported higher educational status than those completing nationwide paper-and-pencil surveys in Japan⁴⁴ and those living in Tokyo, in Osaka, and in Nagoya^{21, 22}. Thus, similar to typical Internet studies, self-selection might be a limitation of the present study.

Finally, psychological detachment did not have much explanation for outcomes in our participants. Specifically, linear and curvilinear psychological detachment explained successively 6% and 2% of the variances of mental health and work engagement in Model 2. One possible explanation is that we did not examine the combined effects of psychological detachment and other types of recovery experiences. Until now, only bivariate associations of recovery experiences with outcome variables have mainly been

investigated. However, in reality, it is less likely that people use either type of recovery experience exclusively. Rather, they may use various types of recovery experiences simultaneously given the positive correlations among them (e.g., r=.16-63 by Sonnentag⁸⁾, and r=.26-.70 by Shimazu et al. (19). Hence, it is important to examine the combined as well as independent associations of each type of recovery experience with well-being in employees. According to COR theory¹²⁾, employees using various type of recovery experiences simultaneously are assumed to experience better well-being because multiple recovery experiences may provide more opportunity for recovery from resource loss and for resource gain. Another possible explanation is that we did not consider conditions under which employees use psychological detachment. This suggests the possibility that psychological detachment may not be favorable for everybody and in all situations⁴⁵⁾. For instance, employees who experience their jobs as highly meaningful and enjoyable might find detachment difficult to achieve, but lack of detachment might be less of a problem for such people. Thus, job features might moderate the relation between psychological detachment and well-being. Future research needs to examine the conditions under which psychological detachment can have more favorable effects.

Implications for practice

Our findings have some implications for practice. A first implication is that psychological detachment during non-work time is associated with employee mental health and work engagement *in different ways*.

With regard to employee mental health, higher levels of detachment would facilitate better mental health (although the favorable effect of detachment had limitations). It is important that both organizations and supervisors should support employee detachment by advising that employees be as unavailable as possible (e.g., via e-mail, texting or phone) during their non-work time. It might be beneficial for workers to detach from work if they do not use their smartphones or tablets for work-related issues during free time^{46–48)}. However, it might also be possible that checking one's work e-mails helps to detach from work in particular circumstances. For example, if s/he is unsure whether s/he has forgotten to inform a colleague about an important work-related issue, to check the sent box of his/her e-mail account might help him/her thereafter to detach from work. Further research needs to examine whether the use of communication devices such as smartphones or tablets during non-work time can be beneficial or not for one's detachment from work. Organizations and supervisors can also support

employee detachment by not initiating work-related communication with their employees during non-work time, thereby allowing detachment to occur¹⁴. Supervisors can act as role models in this respect by not being available during non-work time. This is particularly important in a country like Japan, because those who are in charge of changing long working culture in Japan are often work addicts themselves⁴⁹. Furthermore, improving working conditions to achieve adequate levels of job demands (e.g., reduce time pressure) can be a promising avenue to facilitate psychological detachment because high job demands can inhibit psychological detachment during off-work time².

It is also important for employees who are at risk for workaholism (i.e., working excessively with an obsessive manner⁵⁰⁾) to modify this tendency, since it inhibits psychological detachment²⁾. Training programs that focus on time management and problem solving skills might be helpful, because workaholic employees take on more work than they can handle and accept new tasks before completing previous ones⁵¹⁾. Rational emotive therapy⁵²⁾ might be also helpful, since workaholic people suffer from the belief that they should be perfect⁵³⁾.

With regard to work engagement, the relation with psychological detachment is more complex and suggest a different practical implication: Moderate levels of psychological detachment would be associated with the highest levels of work engagement. Although operationalizing the optimal level of psychological detachment seems to be not very easy, it should be noted that thinking about work may not be necessarily negative per se^{9,54)}. Positively reflecting about one's work (e.g., thinking about a recent success or about an inspiring goal) might even improve work engagement, but this thinking should not be too much – there seems to be an upper limit for work reflection. Future research needs to clarify the preferable type and amount of work-related thoughts during off-job time to improve work engagement.

Conclusion

Although higher levels of psychological detachment may enhance employee mental health, it seems that moderate levels of psychological detachment are most beneficial for his or her work engagement. In future, more research is needed to address how, and under which conditions, to attain optimal levels of psychological detachment to achieve both better employee mental health and greater work engagement.

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