Does intense ICT use after work help or hinder psychological recovery?

Conference paper

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Summary

Information communication technologies (ICTs) have become a popular leisure platform (for example gaming, social networking). Psychological recovery during our leisure time is vital to replenish psychological and cognitive resources spent at work. In this paper I test whether ICT use for private purposes can be an effective recovery strategy after work through a diary study design. I found that the extent to which ICT use after work leads to detachment and relaxation depends on an individual's compulsive tendencies. Based on these findings, I discuss ways in which we can test whether our leisure activities are actually helping or hindering recovery.

Introduction

Within a service-based economy, and the reliance on customer service excellence as a tool for competitive advantage, customer-facing employees are often dealing with high levels of what have been coined 'emotional demands'. This term is used to refer to the effortful parts of the job that are associated with the customer interaction itself (Vegchel et al 2004) – for example, having to keep calm when different customers are being irate or rude, or having to continuously express positive emotions about the product or service when the employee might be feeling different about it. Extensive evidence suggests that high levels of sustained emotional demands are a strong predictor of burnout, a chronic stress syndrome which has detrimental consequences for individuals and organisations (de Jonge et al 2012; Geurts and Sonnentag 2006; Sonnentag et al 2008).

Importantly, researchers have found that the type of activities we do outside work and whether these allow us to effectively recover play a key role in preventing exhaustion from building up over time (Demerouti et al 2009; Sonnentag et al 2010). In this study I examine the extent to which intensive ICT use outside work helps or hinders the experience of recovery.

What is psychological recovery?

Psychological recovery has been defined as *'the process during which individual functional systems that have been called upon during a stressful experience return to their pre-stressor levels'* (Meijman and Mulder 1998). An established body of literature has extensively documented the crucial role of this process to prevent work stress as follows (Sonnentag et al 2010; Sonnentag and Fritz 2007; Sonnentag 2001). The experience of high demands on a given day trigger acute stress reactions and

changes in our cardiovascular activity (for example increased heart rate, elevated blood pressure) to help the mobilisation of effort. This response drains resources and increases risk of burnout, though this is reversible provided that:

- high demands are random events, *or*
- if high demands are placed regularly, individuals are able to engage in activities after work that help them return the high arousal back to baseline levels.

Two key process have been associated with effective psychological recovery: relaxation and psychological detachment (de Jonge et al 2012; Sonnentag 2001). The relaxation response is characterised by a decrease in heart rate and blood pressure, lower and deeper breath, and loosening up of the muscles. Psychological detachment has been defined as the *'individual's sense of being away from the work situation'* (Etzion et al 1998, p579) and often experienced as switching off (Sonnentag and Bayer 2005). For instance, making job-related phone calls or completing other job-related tasks while at home means that you are not detaching from work. Importantly, some studies have found that only thinking about work-related problems when at home can be enough to increase arousal and trigger the stress response (Cropley and Purvis 2003; Shimazu et al 2016).

Why is psychological recovery so important?

Studies have shown that daily recovery is not only relevant to prevent burnout but it is also associated with a range of relevant work outcomes (Shimazu et al 2016; Sonnentag 2001; Sonnentag et al 2010). For instance, recovery has been found to help people reappraise the high work demands as motivational work challenges instead (Bakker et al 2008). It has also been associated with proactive behaviour at work the morning after the experience of recovery. Thus, when an individual reported being recovered from the previous work day, researchers identified greater levels of personal initiative and pursuit of learning at work (de Jonge et al 2012) and greater levels of work engagement the day after (for example Sonnentag 2001; Sonnentag et al 2010; Hahn et al 2011; Rodríguez-Muñoz et al 2014).

Considering the important benefits of recovery, it is paramount that we understand how the activities we engage with after work help or hinder this process. Importantly, researchers have found that not all activities that we think help us relax and unwind actually have that effect on us. For instance, passive leisure activities such as watching TV have shown mixed effects on recovery, with studies reporting positive, non-significant and even negative effects on recovery (Sonnentag and Natter 2004). Socialising with friends has also shown mixed results, with some studies showing even negative associations with different indicators of recovery (Sonnentag and Natter 2004). For example, people may socialise with workmates or engage in work-related conversations, which in turn trigger work-related thoughts that inhibit detachment. Given the availability of ICT and the wide variety of activities with which we can engage online, it is unsurprising that we spend a large part of our leisure time online. The extent to which ICT use may or may not lead to recovery will be discussed next.

Does ICT use lead to recovery?

Some studies have documented the benefits of ICT-related leisure. For instance, social networking has been found to increase an individual's social capital (Ellison et al 2007); also online gaming has been associated with important cognitive development (de Freitas and Griffiths 2007). Less is known

about the extent to which ICT effectively allows us to relax and detach from work. Some suggest that because we often use the same device or technology to access work and leisure, work-related thoughts can easily arise when we are online, thereby interfering with work detachment (Derks et al 2014; Lanaj et al 2014). For example, you may be using a device for gaming outside work and still receive email alarms in the same gadget, which, in turn, interferes with your ability to forget about work. It has also been argued that the easy access and opportunity of immediate rewards that some online activities provide make them ideal ways of escaping from, or shutting down, negative emotions such as worry, sadness or anger. Because of this, those who strongly lack more adaptive coping strategies could be more at risk of becoming hooked or even 'addicted' to ICT (Griffiths 2010). Although not formally recognised as a psychiatric disorder, Internet addiction has been characterised as the experience of losing control over use and experiencing constant conflict with personal and or work life because of it. Studies confirmed that this only affects a minority of the population; however, intensive ICT use seems to be significantly more prevalent (Quinones-García and Kakabadse 2014; Quinones and Kakabadse 2015). We define intensive ICT as high engagement with the Internet to deal with stress or negative emotions that might occasionally lead to conflict in personal and work life (Charlton 2002; Griffiths 2005, 2010). Thus, in a large cross-national study (n>1,000; UK, US and UAE) it was found that between 20% and 40% of people claimed they sometimes struggle to switch off from ICT or experienced conflict with their personal life as a result of their ICT use (Quinones and Kakabadse 2015).

Aims of the study

Considering the variety of ICT activities, its easy access and availability, it is unsurprising that most of us spend quite a significant part of our leisure time on it. Although people may perceive the activities they engage with online as relaxing or helping to switch off from work, the extent to which intense ICT use can actually help restore emotional resources to help us cope with another busy day at work has not been empirically tested. In view of the above discussion, the first aim of this study was:

1   **Examine the extent to which intensive ICT use after work drives the experience of recovery.**

Acknowledging the variety of emotional demands across different days, diary studies have shown that on days where people report higher levels of resource drain at work, they were less able to relax and detach from work compared with days with lower levels of work demands (Sonnentag and Bayer 2005; Simbula 2010). Furthermore, studies also found that on days of higher than usual work demands, we may become more prone to engage in passive leisure activities such as TV watching, which as discussed earlier have mixed effects on recovery, as opposed to active leisure activities such as physical exercise, which seem to have an unequivocal good impact on recovery (de Jonge et al 2012; Hobfoll and Shirom 2001). If we conceptualise ICT use as a more passive activity, it is expected that on days of higher demands employees would be more likely to engage in intensive ICT use. Hence the second aim of the study was:

2   **Test whether, on days of higher than normal demands, people have a stronger tendency to engage in intensive ICT use.**

Methods

Participants and procedure

The researcher recruited participants from a large market research company. Two key selection criteria were used:

- They use ICT during their leisure time.
- Their job involves dealing with customers on a regular basis.

Those who met the criteria were invited to participate in a subsequent four-day consecutive diary study which would start a week later. A total of 320 people completed the baseline survey. Of these, 84 participants responded to the diary over four consecutive days, three times a day (before lunch, after work and before going to bed). This led to 880 data points. Items from validated instruments were used. I present details of these instruments in the following subsection.

Instruments

The baseline questionnaire included trait or general versions of the variables included in the diary. The items were essentially the same, although in the diary:

1 Instruments were shorter. This is common in diary studies as these have inherent space limitations. Thus, a limited number of items from the original scales were selected (Ohly et al 2010).

2 The wording of the item reflected the specific period of time that the item referred to. For instance, whereas a general item of intensive Internet use was: 'How often do you feel an irresistible desire to be online?', the corresponding diary item was: 'This morning, I experienced an irresistible desire to be online.' Cronbach's alpha were estimated for each baseline instrument and then for each day. Then an overall reliability alpha coefficient was estimated as the average across the four days.

Intensive Internet use

I used Meerkerk et al's (2010) Compulsive Internet Scale. The scale consists of 14 items, and respondents answer each of the items on a five-point Likert scale, from 1 = never to 5 = very often. A sample item was: 'How often do you feel depressed or irritated when you cannot use the Internet?' Cronbach's alpha for both the baseline and daily versions were good, ranging between 0.79 and 0.95.

Emotional demands

I measure demands in terms of both emotional rule dissonance and customer demands with existing items from relevant studies (Xanthopolou et al 2013). A sample item: 'I have to react with understanding to clients with unreasonable behaviour.' Cronbach's alpha for the four consecutive days ranged between 0.79 and 0.90.

Psychological recovery

I used Sonnentag and Fritz's (2007) questionnaire, where participants are asked to respond with respect to their free evenings on a five-point scale from 1 = I do not agree at all, to 5 = I fully agree. The questionnaire has four subscales representing each recovery experience. For the purpose of this

study I focused on the psychological detachment dimension (for example, 'I forget about work') and the relaxation dimension, each with a Cronbach's alpha of 0.93. A sample item of the diary version was: 'Right now, I feel relaxed' (Derks and Bakker 2012). Cronbach's alpha for the four consecutive days in the morning scale were 0.84, 0.82, 0.69 and 0.78.

Data analysis

Each participant completed a baseline questionnaire as well as the four-day diary surveys. Measurements at the day level, where each individual was surveyed three times a day (Level 1), were nested within persons (Level 2) throughout a four consecutive day interval. This complex data structure is best analysed with multilevel analysis. I used the SPSS Mixed Model to test my hypotheses.

Prior to testing hypotheses, data needs to be prepared for analysis (Martinez-Corts et al 2015). In particular, Level 2 variables are centred at the grand mean, and Level 1 variables around the mean of each individual across the four days. Thus, for instance, intensive Internet use in the morning was centred around the mean of each individual across the four days in that particular variable. In contrast, general compulsive Internet use was centred around the grand mean of all individuals in that variable. By centring the within-level variables at the person mean, all between-person in these variables is removed so that the findings at this level can only be attributed to within-person effects (Sonnentag et al 2008).

Once data was prepared, various models were tested using the maximum likelihood (ML) estimation method. Each model was tested for improvement in relation to the previous one by estimating the differences of their associated log likelihood statistic, –2*log, and this difference was checked for significance with a Chi-square test (Martinez-Corts et al 2015).
The null model was the first step with no predictors other than the intercept. In Model 1, Level 1 variables were entered, including relevant demographic variables and general levels of daily predictors. Since centring Level 1 variables at person mean results in losing between-person variance, the between-person difference on average level of daily predictors would be neglected if baseline versions of the predictors were not controlled for in the analysis. Model 2 included the daily demands at lunch time. Model 3 was used to test the significance of the hypothesised interaction terms.

Results

The between-person and within-person variance components were examined to ensure the multilevel structure of the data was supported. The intraclass correlation (ICC) for demands was $\rho=0.51$. This means that 51% of the answers in questions about daily demands could be explained by between-person variations in the four-day measurement occasions, whereas 49% of the variance could be explained by within-person variation. The ICC values for the rest of the variables were as follows: intensive Internet use before bed $\rho=0.72$ and recovery before bed $\rho=0.48$. The ICC value and the significance of the intercept variance term for each variable collectively suggest that sufficient variance can be explained by the between- and the within-person levels and therefore the multilevel structure of the data is supported. Prior to hypothesis testing, means, standard deviations and correlations among all study variables were estimated, as shown in Table 1. Correlations with daily variables were estimated using the aggregated scores per individual over the four days of study.

Table 1: Mean, standard deviations, and intercorrelation between variables

Variable	M	SD	1	2	3
Level 2 variables					
1.Compulsive Internet Use	2.98	0.73			
Level 1 variables					
2.Daily demands after lunch	2.34	0.90	0.188**		
3.Daily Compulsive Internet Use before bed	2.01	0.94	0.494**	0.340**	
4.Daily Recovery before bed	3.25	0.89	−0.069	−0.047	−0.133*

Multilevel model testing confirmed that on days of higher-than-average emotional demands, there was a more intense use ICT before going to bed, as shown in Table 2 (B=0.378, p<0.01).

Table 2: Multilevel estimates predicting intensive Internet use before bed

	Null Model	Model 1	Model 2*
Intercept	1.98***(0.09)	1.98***(0.08)	1.98***(0.08)
Level 2 variables			
Compulsive Internet use		0.630***(0.11)	0.613***(0.10)
Level 1 variables			
Daily demands after lunch			0.378**(0.12)
Diff-2*log (*df*)		23.7***(1)	27***(2)

Note: †p<0.10 *p<0.05. **p<0.01. ***p<0.001.

The impact of intensive Internet use on recovery appears to be moderated by trait levels of compulsive Internet use. Thus, the interaction term of intensive Internet use before bed and baseline compulsive Internet use as shown in Table 3 (B=−0.350, p<0.05) in relation to recovery before going to bed was significant. Simple slope tests revealed that at high levels of CIU baseline, the relationship between intensive Internet use and recovery before bed is negative (b=−1.18, SE=0.37, p<0.001) whereas at low levels the relationship was of the opposite sign (b=0.90, SE=0.54, p=0.09).

Table 3: Multilevel estimates predicting recovery before bed

Intercept	Model 1	Model 2	Model 3	Model 4
Intercept	3.25***(0.08)	3.27***(0.07)	3.26***(0.07)	3.26***(0.07)
Level 2 variables				
Psychological detachent	0.128†	0.131† (0.07)	0.130† (0.07)	0.174† (0.09)
Intensive Internet use baseline				0.118 (.09)
Level 1 variables				
Demands at lunch		−0.118(0.08)	−0.117(0.08)	−0.111(0.11)
Intensive Internet use before bed			−0.297**(0.11)	−0.114 (0.14)
Intensive Internet use before bed * CIU baseline				−0.350** (0.15)
Diff-2*log (*df*)	10**(1)	−4 (2) NS	75***(1)	7**(1)

†p<0.10 *p<0.05. **p<0.01. ***p<0.001.

Discussion and practical implications

The aims of this study were twofold: first, to test the extent to which ICT use after work helps or hinders recovery; and second, to test whether higher than usual demands on a particular day increase our need to engage in ICT use more intensively. Whereas I found support for impact of higher demands at work on more intensive use on that day, I also found that intensive use is not not always negative in terms of recovery experience. Thus, the relationship between intensive Internet use and experience of recovery was moderated by compulsive tendencies on ICT. On days of more intensive ICT use, intensive Internet users experience lower recovery before bed. In contrast, those with lower compulsive tendencies experience higher recovery on days where they engaged intensively on ICT use. It is concluded that for compulsive users, there seems to be a price to pay for easy access to recovery activities (that is, online recovery) – not all 'recovery' is indeed 'effective recovery'. In contrast, non-compulsive users do experience positive effects from intensive ICT use.

The study of course has limitations which should be acknowledged. The reactivity of the diary method cannot be ruled out. Nonetheless, the studies which have documented changes in behaviour as a result of keeping a diary are often longer and therefore a four consecutive day design is less likely to have caused that reaction. The measures we used are still subjective, therefore further studies would benefit from using more objective measures.

In spite of the limitations of this study and the need for future research, I believe relevant practical implications can be derived from it. From an individual viewpoint, I would encourage you to experiment and test the real impact of your chosen leisure activities outside work. Examine whether this activity really helps you feel more energised and more relaxed. By asking yourself these questions after you engage in these activities, you may find that, yes, they help you feel better, or you may realise that they are just an easy way to shut down uncomfortable emotions and thoughts of frustration, anger or stress. If this is the case, you might want to think about doing something different; physical exercise seems to have the best results for driving recovery. When it comes to ICT use after work, as with TV watching, this seems to have mixed results for different people, so do experiment and confirm whether the length of time or the activity itself is doing you the good you assume and deserve.

From an organisational viewpoint, within a 24/7 connected culture, it is important that employers are aware of the strong evidence showing how recovery not only keeps their employees healthy, but it is also associated with a more engaged, proactive and productive workforce. Hence, it is in their best interest to promote a culture where the importance of switching off and really recovering from daily stress is truly understood, supported and even rewarded.

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