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Author(s): Kinnunen, Ulla; Rantanen, Johanna; Bloom, Jessica de; Mauno, Saija; Feldt, Taru;
Korpela, Kalevi

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Running head: BOUNDARY MANAGEMENT AND RECOVERY

The Role of Work-Nonwork Boundary Management in Work Stress Recovery

Ulla Kinnunen

University of Tampere, Finland (ulla.kinnunen@uta.fi)

Johanna Rantanen

University of Jyväskylä, Finland (k.johanna.rantanen@jyu.fi)

Jessica de Bloom

University of Tampere, Finland (jessica.de.bloom@uta.fi)

Saija Mauno

University of Tampere and University of Jyväskylä, Finland (saija.mauno@uta.fi)

Taru Feldt

University of Jyväskylä, Finland (taru.feldt@jyu.fi)

Kalevi Korpela

University of Tampere, Finland (kalevi.korpela@uta.fi)

Author note

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Correspondence concerning this article should be addressed to Ulla Kinnunen School of Social Sciences and Humanities, FI-33014 University of Tampere, FINLAND. E-mail:

ulla.kinnunen@uta.fi

Abstract

The aim of the present study conducted among 1,106 Finnish employees was to identify boundary management profiles based on cross-role interruption behaviors from work to nonwork and from nonwork to work. Adopting a person-oriented approach through latent profile analysis, five profiles were identified: Work Guardians (21% of the employees), Nonwork Guardians (14%), Integrators (25%), Separators (18%) and an Intermediate Group (22%). We then examined differences between these profiles with respect to recovery experiences (psychological detachment from work, relaxation, mastery experiences, and control during off-job time) and recovery outcomes (vigor and exhaustion). Work Guardians had the poorest situation in terms of recovery experiences and outcomes. Integrators came close to Work Guardians in their responses, but they showed better relaxation and control during off-job time. Nonwork Guardians and Separators had the most beneficial recovery experiences. The Intermediate Group scored near the average in all evaluations. Altogether the findings suggest that boundary management profiles play a significant role, especially regarding recovery experiences.

Key words: exhaustion, recovery experiences, vigor, work-nonwork boundaries

The Role of Work-Nonwork Boundary Management in Work Stress Recovery

Introduction

In modern times, technological advances have enabled working at almost any time and in any place. Therefore, the boundaries between work and nonwork are often blurred (Ashforth, Kreiner, & Fugate, 2000; Duxbury, Higgins, Smart, & Stevenson, 2014). Not being able to separate work from other important parts of life and being constantly accessible reduces time for rest and recovery (Lundberg & Cooper, 2011). Recovery – described as a process opposite to the strain process (Meijman & Mulder, 1998) – is important for reducing the negative effects of stressful working conditions (Geurts & Sonnentag, 2006). Recovery allows individuals to replenish their resources and return to their pre-stressor level after a stressful experience (Meijman & Mulder, 1998). A growing body of research demonstrates that recovery during off-job time promotes employees' well-being, health and job performance (e.g., Binnewies, Sonnentag, & Mojza, 2010; Kinnunen, Feldt, Siltaloppi, & Sonnentag, 2011; Sonnentag, Binnewies, & Mojza, 2008).

In this study we focused on examining employees' work-nonwork boundary management from the perspective of work stress recovery. Boundary management refers to the ways in which employees create, maintain and negotiate boundaries between work and nonwork (Ashforth et al., 2000; Bulger, Matthews, & Hoffman, 2007). Boundaries (e.g., physical, temporal or psychological) define entities as separate from one another and serve to structure the various roles of individuals in different life domains. These ways or styles of constructing boundaries can be located along a continuum from weak boundaries (high integration between domains) to strong boundaries (high segmentation between domains) (Ashforth et al., 2000; Bulger et al., 2007; Clark, 2000; Duxbury et al., 2014; Kossek, Ruderman, Braddy, & Hannum, 2012).

Our study is among the first to combine two areas of theory and research, that is, boundary management and recovery, and it has two main aims. First, we continue the research stream initiated by Bulger et al. (2007) and Kossek et al. (2012) broadening the focus from separate boundary management styles to profiles of different styles. Thus, instead of examining one style at a time, we examine a combination of different styles, that is, distinct profiles of boundary management using a person-centered approach (e.g., Wang, Sinclair, Zhou, & Sears, 2013). This affords us a more holistic picture of boundary management, as in reality employees may use several boundary management styles simultaneously. For example, employees may use segmentation regarding nonwork, but not work. It has also been shown that alternating styles, i.e., switching between separation and integration, are possible (see Kossek & Lautsch, 2012). Consequently, we achieve a better understanding of individual differences in boundary management than when looking at each separate boundary management style at a time. Second, we examine the profiles from the perspective of work stress recovery. Recovery is conceptualized in terms of recovery experiences and outcomes. Recovery experiences refers to processes that aid recovery (Sonnentag & Fritz, 2007) and recovery outcomes refers to the result of the recovery process (Sonnentag & Geurts, 2009). Of the various recovery outcomes, we focus on vigor and exhaustion at work – the former being an outcome of a successful and the latter an outcome of unsuccessful recovery process (Kinnunen et al., 2011).

By examining boundary management from the viewpoint of recovery, our study makes two contributions to the literature. First of all, we are able to show which profiles – not separate styles – of boundary management are conducive or deleterious to recovery. Second, our study broadens the picture of boundary management in recovery by studying both recovery experiences and outcomes. As far as we know, among recovery experiences, only psychological detachment has previously been addressed in the context of boundary

management (Derks, van Mierlo, & Schmitz, 2014; Hahn & Dormann, 2013; Park, Fritz, & Jex, 2011). We therefore widen the view to cover the experiences of relaxation, mastery, and control during off-job time (Sonnentag & Fritz, 2007). As boundary management has so far been examined from the viewpoint of work-family outcomes (i.e., work-family conflict, work-life balance; e.g., Bulger et al., 2007; Carlson, Kacmar, Zivnuska, & Feguson, 2014; Kossek et al., 2012; Matthews, Barnes-Farrell, & Bulger, 2010; Matthews, Winkel, & Wayne, 2014), our study also extends the potential outcomes of boundary management.

Characteristics of work-nonwork boundaries

The ways individuals separate or integrate life domains while carrying out work and nonwork roles have typically been assessed as being “high to low” on segmentation to integration tendencies (Kossek et al., 2012). This means that boundaries may be permeable or impermeable (Ashforth et al., 2000; Kossek et al., 2012). When moving from one life domain to another, people have to cross boundaries. In the case of strictly separated work and nonwork roles, these role transitions are relatively effortful, because the boundaries are inflexible and impermeable and the roles are usually confined to specific places and times. In the case of highly integrated roles, the transition process is much less elaborate. A flexible and permeable boundary enables individuals to participate in the activities of one role in various settings and at various times and also permits the concerns and issues of one role to encroach on those of another role. For example, in a job where one can set aside tasks if necessary to meet the demands of another role (e.g., university teacher), the boundaries are more flexible than in a job where this is not possible (e.g., waitress).

However, there are also other aspects that describe boundary management styles. First, boundaries can be either symmetrical or asymmetrical (Kossek & Lautsch, 2012). With symmetrical boundaries, processes flow evenly between the domains, whereas with asymmetrical boundaries, an individual allows processes to flow in one direction (e.g.,

answering work calls at home) but not the other way around (e.g., taking care of family matters at work). Both high integration (in both directions) and high segmentation (in both directions) are examples of symmetrical boundaries. Second, work and family role centrality determines how strongly individuals protect a domain from encroachment by another domain (Clark, 2000; Kossek et al., 2012). For example, employees with a highly pronounced work identity are likely to prevent family issues from encroaching on the workplace. Third, there are also certain contextual factors at home (e.g., children) and at work (e.g., occupation) which play a role in forming the boundaries (Ashforth et al., 2000; Bulger et al., 2007; Kossek et al., 2012).

Two studies have examined profiles of boundary management, that is, the significance of different combinations of boundary management styles instead of focusing on each management style separately. The study by Bulger et al. (2007) identified profiles based on boundary strength (consisting of flexibility-willingness, flexibility-ability and permeability of the domain). They identified four profiles, of which integrators were the clearest (second largest) profile, and the remaining three profiles were fairly complex. The predominant profile consisted of those who to some extent integrated the work domain and to some extent segmented the personal life domain. In this study differences in outcome variables were not examined. The study by Kossek et al. (2012) was based on clustering employees on the basis of five characteristics: nonwork interrupting work behaviors, work interrupting nonwork behaviors, boundary control and work and family identity. The result included six profiles, which could be divided into low (two profiles) and high (four profiles) control profiles. The low control profiles (e.g., Work Warriors) tended to score lower on positive outcomes (work-schedule fit, time adequacy) and higher on negative outcomes (work-family conflict, distress), whereas the opposite was true for high control profiles (e.g., Dividers, Fusion Lovers, Family Guardians).

In the present study we aimed to identify profiles of boundary management on the basis of cross-role interruption behaviors from work to nonwork and from nonwork to work. Cross-role interruption behaviors refer to the degree to which individuals allow incursions from one role to another (Ashforth et al., 2000; Kossek et al., 2012). These incursions are called inter-domain transitions, defined as behavioral actions between the domains through which individuals cognitively or behaviorally shift their resources (time, attention, etc.) from one domain to another, and seen as the mechanism by which an individual actually integrates or segments the work and family domains (Matthews et al., 2010; Matthews et al., 2014). Thus, in line with this view, the cross-role interrupting behaviors were seen as the most fundamental characteristics of boundary management. Accordingly, we based our profiles on these cross-role interruption behaviors. This (i.e., avoiding high complexity) also made the profiles easier to hypothesize and interpret as well as easy to replicate and test in future studies.

On the basis of the boundary management theory and research (e.g., Ashforth et al., 2000; Kossek et al., 2012), we hypothesize (*H1*) four profiles, including two profiles with symmetrical (Integrators, Separators) and two with asymmetrical boundaries (Work Guardians, Nonwork Guardians) between the domains: 1) Integrators have high cross-role interruption behaviors between domains in both directions, 2) Separators have low cross-role interruption behaviors between domains in both directions, 3) Work Guardians have high interruption behaviors from work to nonwork, but not vice versa, and 4) Nonwork Guardians have high interruption behaviors from nonwork to work, but not vice versa.

To test these hypotheses, we use latent profile analysis (LPA), which is a model-based analysis method based on model parameters (e.g., number of latent classes, within-class covariance structure) specified *a priori* (cf. cluster analysis). Therefore, in LPA it is possible to compare models with different numbers of latent classes (here profiles) against each other using consistent statistical criteria (Wang et al., 2013). Hence, the hypothesized four-class

(profile) model is compared to models with fewer and more classes (profiles) to test whether our hypotheses are supported. LPA relies on theoretically justified hypotheses and captures population heterogeneity by revealing qualitatively different subpopulations within the data (Wang et al., 2013).

Work-nonwork boundary management and recovery experiences

In conditions of blurring boundaries between work and nonwork there may be insufficient time for rest and recovery (e.g., Lundberg & Cooper &, 2011). Thus, recovery from work stress may be threatened if life domains cannot be kept separated and employees continue working at home (Sonnentag, 2001; Sonnentag & Zijlstra, 2006). In the present study, recovery was approached by focusing on recovery experiences proposed by Sonnentag and Fritz (2007). The idea is that leisure activities (e.g., going for a walk, watching TV) unfold their recovery potential by enabling specific experiences: psychological detachment from work, relaxation, mastery experiences and control. Psychological detachment implies disengaging mentally from work during off-job time. Relaxation is a state characterized by low (sympathetic) activation and increased positive affect. Mastery experiences refer to off-job processes associated with facing new challenges and learning. Control applied to leisure time refers to self-determination in deciding how to spend one's free time.

Theoretically, according to the Effort-Recovery Model (Meijman & Mulder, 1998), recovery from work stress occurs when an individual is no longer confronted with work demands. Therefore it is essential to refrain from work during off-job time. Thus, on the basis of the Effort-Recovery Model we may expect that segmentation promotes recovery, as it guarantees at least some respite from work during free time. Similarly, we may expect that integration may prevent recovery, as work demands are then present during nonwork time.

When adopting this view to recovery experiences, we may expect that segmentation (in both directions and from work to nonwork) may be conducive especially to psychological

detachment, relaxation, and control during off-job time. This occurs because individuals who separate their work and nonwork roles create impermeable boundaries around their life domains, which may prevent the intrusion of thoughts and actions from work into private life. Therefore these individuals are able to psychologically detach from their work, relax during off-job time and have better control over their nonwork time. Three recent studies suggest that actively separating work and nonwork life domains is conducive to psychological detachment from work (Derks et al., 2014; Hahn & Dormann, 2013; Park et al., 2011). As far as we know, there is so far a lack of studies on the role of boundary management in relation to relaxation, control, and mastery.

Accordingly, we hypothesize (*H2*) that Separators and Nonwork Guardians, both of whom do not accept interrupting behaviors from work to nonwork, have the highest levels of psychological detachment from work (*H2a*), relaxation (*H2b*), and control (*H2c*) during nonwork time. Integrators and Work Guardians, who accept interrupting behaviors from work to nonwork, have, conversely, the lowest levels of psychological detachment, relaxation, and control during nonwork time.

It is also possible that mastery experiences benefit from segmenting. As work is left behind, there may be resources and effort left to address new challenges or learn new things during leisure time. However, segmentation (in both directions and from work to nonwork) also prevents positive spillover from work to nonwork (Powell & Greenhaus, 2010). This means, positive affect, values, skills, and behaviors may not be transferred from the work domain in a way that benefits the nonwork domain (Hanson, Hammer, & Colton, 2006). This, in turn, may have a negative effect on mastery experiences during off-job time, as mastery experiences are related to positive aspects of work, that is, job resources (Kinnunen et al., 2011; Kinnunen & Feldt, 2013). Thus it seems that those having good resources on the job (e.g., control, support) are likely to have more internal resources (e.g., energy) available for

learning and broadening their horizons during off-job time. Of the job resources, Integrators very probably have high control over their jobs as they are able to integrate the domains of work and nonwork (Matthews et al., 2010).

Consequently, due to these partly counteracting effects, it is difficult to make exact predictions. However, we hypothesize (*H2d*) that Integrators have higher mastery experiences during off-job time than Separators, Nonwork Guardians and Work Guardians. This is due to positive spillover from work to nonwork, occurring especially among Integrators, because of the availability of many job resources in their jobs.

Work-nonwork boundary management and recovery outcomes

Sonnentag and Geurts (2009) differentiate three types of recovery outcomes: psychological, physiological, and behavioral. In the present study, we focus on psychological recovery outcomes. More specifically, we examine vigor and exhaustion. Vigor is considered the key dimension of work engagement (Shirom, 2010), and job exhaustion constitutes the core dimension of burnout (Maslach, Schaufeli, & Leiter, 2001). Vigor refers to high levels of energy and mental resilience while working, the willingness to invest in one's work, and persistence in the face of difficulties (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Job exhaustion refers to feelings of overstrain, tiredness and fatigue resulting from long-term involvement in an over-demanding work situation depleting an individual's overall energy (Maslach et al., 2001). Although both vigor and exhaustion indicate the level of energy at work, they have been shown to be independent constructs rather than endpoints of the same energy continuum (Demerouti, Mostert, & Bakker, 2010; Mäkikangas, Feldt, Kinnunen, & Tolvanen, 2012). Therefore being free from exhaustion symptoms does not necessarily mean having high vigor.

On the basis of the Effort-Recovery model (Meijman & Mulder, 1998), we may expect that segmentation helps to maintain an appropriate energy level (i.e., high vigor, low

exhaustion) at work, as work demands are not likely present during off-job time. In other words, due to impermeable boundaries from work to nonwork, segmentation offers better recovery opportunities during nonwork time than the conditions of integration. Moreover, as recovery experiences are positively related to well-being (e.g., vigor, satisfaction) and negatively to strain (e.g., exhaustion, psychosomatic complaints) (Kinnunen et al., 2011; Sonnentag & Fritz, 2007; Sonnentag, Binnewies, & Mojza, 2010), this also supports the view that highest well-being is likely in those boundary management profiles ensuring the highest recovery experiences (i.e., Separators and Nonwork Guardians). It is known that Work Guardians especially identify themselves with their work and prioritize their career over family life (Kossek et al., 2012) resulting in long working hours and neglecting other important aspects of life (family, friends, hobbies). This may, in turn, decrease recovery opportunities during off-job time and deplete a person's energy resources in the long-term, resulting in exhaustion. In light of the views presented above, we expect (*H3a*) that Work Guardians score highest on job exhaustion, that Separators and Nonwork Guardians score lowest, and that Integrators fall in between.

However, concerning vigor at work, the picture may be different. It is known that Work Guardians and Integrators are generally more work-oriented than Separators and Nonwork Guardians (Kossek et al., 2012). It is also known that commitment to one's job and organization is linked to high levels of vigor (see Halbesleben, 2010, for a meta-analysis). Therefore, we assume that vigor is higher in profiles that put more effort into work and identify themselves with their jobs (i.e., Work Guardians and Integrators). Of these two profiles, the situation in terms of vigor may be better among Integrators, who likely have high control over their jobs (Matthews et al., 2010), which boosts work engagement and its core component of vigor (Halbesleben, 2010). Instead, Work Guardians, due to prioritizing their work above family and therefore having long working hours, may also deplete their energy,

and therefore have less vigor than Integrators. In addition, although Separators and Nonwork Guardians have good recovery opportunities during nonwork time to maintain their vigor, they may not be willing invest heavily in work and hence do not experience high vigor. Therefore, we hypothesize (*H3b*) that Integrators have the highest vigor at work, whereas Work Guardians, Separators and Nonwork Guardians score lower, showing similar levels of vigor with each other.

Methods

Participants and procedure

The study was conducted in spring 2013 among Finnish employees ($N = 1,106$) who completed an electronic questionnaire sent to their work e-mail addresses. The response rate was 43%. The participants worked in seven Finnish organizations from different sectors, the largest of which were education, information technology and media. By sampling different organizations, we wanted to include employees from a variety of different jobs. The organizations were recruited from the client organizations of a company supplying occupational health services. The employees received information about the goals of the study with the assurance that responses would be treated confidentially and that participation was voluntary.

In Finland, full-time employment is the rule and part-time work the exception. According to Eurostat (2015), only 15.1% of the Finnish work force were employed part-time in 2013. Their average weekly working hours were 19.4, compared to 40.7 hours among full-timers (84.9%). Around two-thirds of Finnish employees report that they have some influence over their working hours, such as the starting and finishing times of their workday (Sutela & Lehto, 2014).

Of the participants of this study, 61% were women, the average age was 47 years (range 20–68, $SD = 10.47$), 78% had a partner and 43% had children living at home (for those

with children $M = 1.80$, range 1–7, $SD = 0.81$). Of the sample, 9% were blue-collar workers (e.g., bus driver, cleaner), 30% lower-white collar workers (e.g., office employee, nurse), 58% higher white-collar workers (e.g., teacher, physician) and 3% higher-level managers (e.g., principal, chief executive officer). The vast majority (95%) had a full-time job. The average working hours were 38 per week (range 10–60, $SD = 7.60$) and almost all employees (93%) had a regular day shift.

Measures

Cross-role interrupting behaviors. Boundary management was operationalized via cross-role interruption behaviors from nonwork to work and from work to nonwork. Both *nonwork interrupting work behaviors* (e.g., “I take care of personal or family needs during work”) and *work interrupting nonwork behaviors* (e.g., “I respond to work-related communications (e.g., emails, texts, and phone calls) during my personal time away from work”) were measured with three items each, which loaded most highly on the scales developed by Kossek et al. (2012). The response scale ranged from 1 (*totally disagree*) to 5 (*totally agree*).

Recovery experiences. *Psychological detachment, relaxation, mastery, and control* during off-job time were measured using a Finnish version of the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007), which has been validated in Finland (Kinnunen et al., 2011). Participants were asked to respond to the items with respect to their off-job time using a five-point scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). Each scale consisted of three items. The constructs were measured with items such as: “I don’t think about work at all (Psychological detachment), “I do relaxing things” (Relaxation), “I do things that challenge me” (Mastery) and “I determine for myself how I will spend my time” (Control).

Recovery outcomes were operationalized via occupational well-being considering both negative and positive indicators, that is, job exhaustion and vigor at work. *Job exhaustion* was measured with five items (e.g., “I feel emotionally drained from my work”) from the Maslach Burnout Inventory – General Survey (Maslach, Jackson, & Leiter, 1996), which has been validated in Finland (Kalimo, Hakanen, & Toppinen-Tanner, 2006). *Vigor* was measured with three items (e.g., “At my work, I feel bursting with energy”) from the Utrecht Work Engagement Scale (UWES, Schaufeli, Bakker, & Salanova, 2006), of which the construct validity has been found to be good in Finnish occupational samples (Seppälä et al., 2009). The response scale ranged from 0 (*never*) to 6 (*every day*) for both measures.

Data analyses

First, a confirmatory factor analysis (CFA) was performed to ensure that the measures described above were distinct latent constructs. The items of each measure were set to load on the corresponding latent factor only and the latent factors were allowed to correlate with each other. The fit of this CFA model was evaluated using the following goodness-of-fit indices: χ^2 -test, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). A non-significant χ^2 -test indicates a good fit, as does RMSEA with values of 0.05 or less, and CFI and TLI values equal or higher than 0.90 (Hu & Bentler 1999; Kline 2005).

Second, latent profile analysis (LPA) was used to investigate whether there existed homogeneous subpopulations in our sample that reflected the hypothesized four latent profiles of boundary management. Specifically, the mean scores for nonwork interrupting work behaviors and work interrupting nonwork behaviors were entered into the LPA analysis. The group solutions were estimated from one group onwards until the model fit with the data was no longer improved by estimating yet another group.

In deciding on the appropriate number of latent profile groups, the model fit was evaluated using log likelihood, the sample size adjusted Bayesian information criterion (aBIC), entropy and the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR) (Muthén, 1998-2004; Nylund, Asparouhov, & Muthén, 2007). When comparing different group solutions against each other, smaller log likelihood and aBIC values, and higher entropy values reflect better fit for a given group solution with the data (Muthén, 1998-2004; Nylund et al., 2007). LMR compares neighboring groups (i.e., one vs. two groups, two vs. three groups etc.) against each other, with a significant *p*-value indicating improvement in the model fit as the number of groups is increased by one. Besides log likelihood, aBIC, entropy and LMR values, it is also important to consider the content, rationality, and interpretability of the group-solutions in relation to the theoretical background and the hypotheses of the study.

Third, we investigated differences between the profiles of boundary management identified in such sample demographics (gender, age, number of children, occupational status, weekly working hours, and work schedule) which have been shown to be relevant in the context of work-nonwork interaction (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005). This was performed using cross-tabulation with χ^2 -test or univariate analysis of variance (ANOVA). Fourth, to investigate the differences between the profiles of boundary management in recovery experiences and outcomes, we used analysis of covariance (ANCOVA), with the above-listed demographics in which the profiles differed from each other set as covariates.

Results

Preliminary analyses

The CFA confirmed that each study variable represented a distinct psychological construct. The model fit for the 8-correlated latent factor model was satisfactory as shown by

the fit indices: $\chi^2(271) = 1414.21, p < .001, RMSEA = 0.06, CFI = 0.92, TLI = 0.91$. In addition, the zero-order correlations between the study variables shown in Table 1 indicated no strong correlations (above .60), implying no considerable overlap between the constructs. However, a correlation of .60 was found between detachment and relaxation, and between relaxation and control. This result concurs well with those of earlier studies observing their strong correlations, but still supporting the distinctiveness of the four recovery experiences (Kinnunen et al., 2011; Sonnentag & Fritz, 2007).

Profiles of boundary management

We estimated altogether six group solutions of which the model fits are shown in Table 2. The fit indices did not favor any group solution unanimously. The two-group solution had the highest entropy value, but the six-group solution had the lowest log likelihood and aBIC values. According to the LMR value, there was no further significant improvement in the model fit after five groups. When the two-, five- and six-group solutions were then evaluated according to their content and theoretical interpretability, we found that the two-group solution differentiated the participants into high and low groups only with regard to work interrupting nonwork behaviors. Instead, the five- and six-group solutions contained the hypothesized four profiles of boundary management and were thus theoretically justified. However, the six-group solution did not contain as clear-cut and easily interpretable additional groups as did the five-group solution. The first additional group in the six-group solution differed from other groups only in nonwork interrupting work behaviors and the second in work interrupting nonwork behaviors, whereas the five-group solution contained a distinct additional profile differing in both behaviors. Therefore, we chose the five-group solution over the other group solutions.

The five boundary management profiles identified are illustrated in Figure 1 and their means and standard deviations in cross-role interrupting behaviors are shown in Table 3.

They were labeled “Work Guardians”, “Nonwork Guardians”, “Integrators”, “Separators”, and “Intermediate” according to their mean levels in nonwork interrupting work behaviors and work interrupting nonwork behaviors. The first profile, *Work Guardians* ($n = 228$, 20.6% of the participants) scored high on work interrupting nonwork behaviors and low on nonwork interrupting work behaviors, whereas the opposite pattern was observed for *Nonwork Guardians* ($n = 160$, 14.5%). *Integrators* ($n = 257$, 24.9%) scored high and *Separators* ($n = 205$, 18.5%) low on both nonwork interrupting work behaviors and work interrupting nonwork behaviors. The respondents in the *Intermediate* profile ($n = 238$, 18.5%) scored near the sample mean (cf. Table 1), thus the flow was at an average level between both domains.

Differences between profiles in demographics

The five profiles of boundary management identified differed significantly from each other in every demographic variable studied except for work schedule (see Table 3). Concerning gender [$\chi^2(4) = 27.87, p = .001$] there were more women and fewer men than statistically expected in Separators. Nonwork Guardians were the youngest and Work Guardians were the oldest [$F(4, 1048) = 26.31, p < .001$]. Participants with three or more children belonged more often than others to Integrators and less often to Separators [$\chi^2(12) = 24.27, p = .019$].

The profiles of boundary management also differed in occupational status [$\chi^2(12) = 184.11, p < .001$]. Blue-collar and lower white-collar workers were more often Nonwork Guardians and Separators, while higher white-collar workers were more often Work Guardians and Integrators, and higher-level managers were typically Integrators. In regard to weekly working hours [$F(4, 1045) = 7.08, p < .001$], the results showed that Work Guardians and Integrators worked more hours per week than Nonwork Guardians, Separators, and the Intermediate group. There were no differences in work schedule (day shift/other shifts including shift work) between the profiles.

Differences between profiles in recovery experiences and outcomes

The profiles of boundary management differed significantly from each other in three out of four recovery experiences. As shown in Table 4, Work Guardians and Integrators reported less psychological detachment from work than Nonwork Guardians, Separators and the Intermediate Group. Regarding relaxation and control, Work Guardians scored lower than all other profiles. In addition, Integrators scored lower on relaxation and control than Separators, but Integrators did not differ significantly from Nonwork Guardians. There were no differences in mastery experiences between the profiles. Concerning recovery outcomes, there were no significant differences between the profiles of boundary management in vigor at work, but in job exhaustion Work Guardians tended to score highest.

In sum, the results show, first, that Work Guardians had the poorest situation in terms of recovery experiences and outcomes. Second, Integrators were similar to Work Guardians concerning their mastery and detachment levels, but they showed better relaxation and control during off-job time. Third, Nonwork Guardians and Separators resembled each other in beneficial recovery experiences. The Intermediate Group located on an average level in most of the evaluations.

Discussion

This study offers novel information about boundary management between the domains of work and nonwork from the viewpoint of recovery from work stress. More specifically, the added value of our study is that it contributes to the understanding of boundary management in relation to recovery experiences and outcomes.

Main findings

In line with boundary management theory and research (Ashforth et al., 2000; Bulger et al., 2007; Kossek & Lautch, 2012; Kossek et al., 2012), we expected to find four distinct profiles of boundary management based on cross-role interrupting behaviors between work

and nonwork. Our hypothesis (*H1*) received partial support, as we identified five profiles which included the expected four profiles – Integrators, Separators, Work Guardians and Nonwork Guardians – and one profile – Intermediate Group – showing a similar pattern as Integrators but near the midpoint of the measures of cross-role interruption behaviors.

The majority of the employees (46%) belonged to those showing integration. Thus they had either high (Integrators, 25%) or medium high (Intermediate Group, 21%) interruption behaviors in both directions. This finding indicates that integrating work and nonwork is typical in today's working life as also shown in earlier studies (Bulger et al., 2007; Kossek et al., 2012). Of the employees, 19% belonged to the opposite profile, that is, Separators, with low level of interruption behaviors in both directions. Thus boundary management was symmetrical in these three profiles. Work Guardians, who had a high level of interrupting behaviors from work to nonwork but not vice versa, constituted the second largest profile (21%). Thus they had asymmetrical boundaries, showing a strong permeability of work affairs in the direction of nonwork. Their opposite profile, Nonwork Guardians, was the smallest (15%). They also had asymmetrical boundaries, but now the flow was from nonwork affairs towards work.

The demographics examined provided partial explanations for the heterogeneity in boundary management captured by the profiles and confirmed that there are indeed contextual barriers or opportunities both at home and at work which play a role in boundary management (Ashforth et al., 2000). The most crucial factor was occupational status: Integrators and Work Guardians had jobs with high occupational status (i.e., employed in either higher white-collar occupations or as executives), whereas it was typical of Separators and Nonwork Guardians to work in blue-collar or lower white-collar occupations. This means that the job itself plays an important role in boundary management, and the result confirms that higher professionals'

work-time identities encroach on their private lives more than that of non-professionals (Duxbury et al., 2014).

The profiles differed in recovery experiences, which are mechanisms assisting recovery from work stress during off-job time (Sonnentag & Fritz, 2007). As hypothesized, psychological detachment from work (*H2a*), relaxation (*H2b*) and control (*H2c*) during off-job time were lowest among Work Guardians and Integrators and highest among Nonwork Guardians and Separators. Although this overall trend gained support, it is good to note that Integrators did not differ significantly from Nonwork Guardians either in relaxation or control during off-job time. Consequently, only *H2a* received full support and *H2b-c* partial support. Thus, the best situation in terms of recovery experiences was found to pertain among Separators, and the poorest among Work Guardians. There were no differences in mastery experiences between the profiles, thereby not lending support to our hypothesis *H2d*, expecting higher mastery experiences among Integrators than among Separators, Nonwork Guardians and Work Guardians.

The results concerning Separators and Nonwork guardians are in line with both boundary management (Ashforth et al., 2000) and recovery theory (Meijman & Mulder, 1998). Because people within these profiles create impermeable boundaries from work to nonwork, it guarantees that they are no longer confronted with work demands during off-job time. Therefore they can detach from work, relax and have control over their nonwork time. However, integration in both directions seemed to be less harmful than integrating from work to nonwork only, as the poorest situation in these three recovery experiences prevailed among Work Guardians and not among Integrators. One reason for this finding may relate to the fact that integrating (in both directions) seems to keep the domains of life in a better balance than giving a major role to work only, referring to Work Guardians who in fact had the most work interrupting nonwork behaviors. The non-significant differences in mastery experiences

during off-job time may relate to the fact that counteracting effects between conserved resources and prevented (or promoted) positive spillover from work to nonwork may occur among the profiles.

The profiles did not differ in recovery outcomes, except for the finding that Work Guardians tended to show the highest level of job exhaustion. This latter finding was in line with our hypothesis *3a*, but the other profiles did not behave as expected. Regarding vigor, there were no significant differences between the profiles; thus lending no support to our hypothesis *3b* expecting the highest scores in vigor among Integrators.

Again, the non-significant results may be due to the counteracting effects underlying segmenting and integrating. However in light of the recovery literature, the non-significant differences in occupational well-being between the profiles can be interpreted as evidence for the argument that recovery experiences are mostly needed in demanding and stressful jobs (Sonnentag & Fritz, 2015). As Work Guardians and Integrators with high status and demanding jobs lacked positive recovery experiences, they could not promote their well-being. Similarly, although recovery experiences were high among Separators and Nonwork Guardians, their beneficial recovery outcomes did not fully emerge due to the less demanding nature of their jobs. There was less need for non-work recovery experiences among them (Meijman & Mulder, 1998). It is noteworthy that the average level of well-being at work was quite high among all participants.

Limitations and implications for future studies

This study is not without limitations. First, all data were based on self-reports, which means that the magnitude of the effects reported may be biased due to common method variance. However, there are factors in our study which reduce the risk of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Our measures were derived from established questionnaires with good psychometric properties, they had different scale

anchors, and were located on different pages. In addition, we were able to show that our main constructs were separate from each other. Nevertheless, future research could benefit from data triangulation including more “objectively” measured variables such as register-based sickness absence rates and physiological stress markers (e.g., cortisol excretion) indicative of work stress.

Second, the cross-sectional nature of our study prevents us from drawing causal conclusions. For example, recovery from work stress may influence one’s boundary management styles. To know more about this aspect longitudinal studies are needed. In addition, a longitudinal design would be needed to examine whether the profiles of boundary management are stable across time. In this regard, both short-term (e.g., daily diary studies) and long-term longitudinal studies would be helpful. It would be also important to know what factors might explain possible changes in these and how such changes relate to recovery experiences and outcomes. To achieve a more profound understanding of boundary management behaviors in each profile, qualitative studies are crucial, as they could reveal which behaviors are beneficial or detrimental.

A further limitation derives from the relatively low response rate of the study (43%). However, the response rate is higher than that typical of studies conducted in organizations (35.5%, see Baruch & Holtom, 2008, for a meta-analysis). Unfortunately we had no access to the organizations’ databases, and therefore we could not examine how well the participants represented the original sample in terms of background factors. Nevertheless, the heterogeneity of the sample adds to the generalizability of the findings. Average weekly working hours in the sample were around 38 hours, which is close to the European average (36.5 hours in 2013) (Eurostat, 2015). However, working 38 hours a week hardly constitutes *long* working hours. Thus the emerging profiles might look different in more extreme circumstances. This also applies to other sample characteristics, therefore the profiles

identified in our sample may primarily apply to populations similar to ours. Their prevalence may be different in other samples. For example, the share of Work Guardians and Integrators might be greater in a sample with long working hours. Future studies are still needed to validate our findings.

In our study, we based the profiles of boundary management on cross-role interruption behaviors as we considered these to be the most fundamental features of boundary management on which others, such as domain centrality and boundary control, may have effects. They would deserve further attention in the future (see Kossek et al., 2012). Also, the fit between preferences and opportunities for integration or segmentation offered by the work environment is an important issue for future studies (Matthews et al., 2010; McNall, Scott, & Nicklin, 2015). It would be important to identify profiles based on this fit between preferences for and current experiences of cross-role interruptions and study their consequences for work stress recovery. It is likely that a better match between preferences and experiences would result in positive well-being outcomes.

In addition, the role of background factors as well as other work and family characteristics in shaping boundary management and its outcomes would be worth examining in the future. Such research would add to our knowledge about the role of contextual factors in boundary management. Moreover, the outcomes examined could be broadened. We examined psychological outcomes commonly related to work stress recovery, but it would also be interesting to study behavioral outcomes like job performance (Sonnetag & Geurts, 2009). As the strength of the boundaries is critical for spillover between work and nonwork, this issue deserves further research attention. Positive spillover from work to nonwork and vice versa, for example, in terms of enrichment would be especially worth examining as so far the main interest has been in negative spillover (see McNall et al., 2015).

Conclusions

This study shows that different theory-based profiles of boundary management mattered in regard to recovery from work stress. More specifically, the profiles differed in recovery experiences but not so clearly in recovery outcomes. First, our study confirmed that segmentation is helpful for recovery experiences, especially for psychological detachment (Derks et al., 2014; Hahn & Dormann, 2013; Parks et al., 2011), and also for relaxation and control, but not for mastery experiences during off-job time. Second, our study revealed that integration (in both directions) is not as detrimental to recovery experiences as having work interrupting nonwork behaviors only. This situation prevailing among Work Guardians was the only one relating to recovery outcomes and manifesting in high exhaustion.

From the practical point of view, organizations need to be aware of the different ways of boundary management profiles among their employees in order to support their work-nonwork demands. In this regard it is important to create work cultures that support people working in different ways (Kossek & Lautsch, 2012). Managers may play a key role in identifying opportunities for healthy boundary management and developing a new working culture together with their employees (Koch & Binnewies, 2015). As it seems that there is no single optimal way to manage boundaries between work and nonwork, diversity in organizational human resource (HR) practices (e.g., teleworking, flexitime allowing restructuring of working time to focus on one role at a time) may be needed.

Our person-oriented approach may also help to develop interventions tailored to different profiles. For example, Work Guardians might need interventions to increase their ability to leave work tasks at work and mentally distance themselves from work-related tasks during their free time. As they were at the highest risk of poor recovery, they also need measures to develop strategies to improve their recovery experiences to effectively recover from work stress during nonwork time. Occupational health services (available by law in Finnish organizations) may offer recovery-related training to learn recovery experiences and

recovery-related self-efficacy (see Hahn, Binnewies, Sonnentag, & Mojza, 2011). In addition, HR management in organizations could organize group sessions discussing boundary management and recovery from the viewpoints of both individual employees and the organization.

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Table 1

Means, Standard Deviations (SD) and Zero Order Correlations (N =1,106) between Study Variables

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1.</i>	<i>2.</i>	<i>3.</i>	<i>4.</i>	<i>5.</i>	<i>6.</i>	<i>7.</i>	<i>8.</i>	<i>9.</i>	<i>10.</i>	<i>11.</i>
1. Nonwork interrupting work behaviors	2.89	0.93	(.69)										
2. Work interrupting nonwork behaviors	3.01	1.18	-.08*	(.81)									
3. Detachment	2.93	0.98	.03	-.42***	(.86)								
4. Relaxation	3.81	0.72	.05	-.29***	.60***	(.76)							
5. Mastery	3.46	0.76	-.01	.09**	.15***	.30***	(.77)						
6. Control	3.93	0.78	.03	-.24***	.40***	.60***	.26***	(.83)					
7. Job exhaustion	1.95	1.49	-.13***	.08*	-.35***	-.35***	-.14***	-.29***	(.94)				
8. Vigor at work	4.54	1.24	.01	.09**	.17***	.30***	.22***	.18***	-.46***	(.90)			

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Cronbach's alpha coefficient in parentheses on the diagonal.

Table 2

Fit Indices for the Six Estimated Group Solutions of the Latent Profile Analysis

<i>Number of groups</i>	<i>Log likelihood</i>	<i>ABIC</i>	<i>Entropy</i>	<i>LMR p-value</i>
1	-3235.001	6485.330	-	-
2	-3169.386	6365.597	.72	.000
3	-3151.340	6341.002	.69	.000
4	-3141.541	6332.901	.67	.009
5	-3130.342	6322.001	.64	.027
6	-3118.878	6310.569	.66	.100

Note. aBIC = Sample size adjusted Bayesian information criterion, LMR = Lo-Mendell-Rubin adjusted likelihood ratio test.

Table 3

Cross-Role Interrupting Behaviors and Background Characteristics (M or %) for the Identified Profiles of Boundary Management

	<i>Work Guardians</i>	<i>Nonwork Guardians</i>	<i>Integrators</i>	<i>Separators</i>	<i>Intermediate</i>
Nonwork interrupting work behaviors	1.96 (0.51)	3.96 (0.49)	3.71 (0.50)	2.21 (0.52)	2.70 (0.47)
Work interrupting nonwork behaviors	4.18 (0.52)	1.66 (0.54)	3.94 (0.58)	1.59 (0.49)	2.94 (0.38)
% of women	62.0	63.9	53.8	75.0	53.5
Mean age	50.5 (8.9)	40.3 (11.3)	46.6 (9.8)	47.4 (10.8)	49.0 (9.5)
% having ≥ 3 children	5.7	6.9	9.5	2.0	5.9
% of higher white- collar workers	79.6	34.2	67.9	35.2	61.9
Average working hours	39.6 (9.4)	37.3 (3.9)	39.6 (6.7)	37.6 (4.8)	37.5 (5.6)
% having day shift	94.0	88.5	92.1	94.8	96.1

Note. Standard deviations are reported in parentheses where appropriate.

Table 4

Estimated Means^a (EM) and Standard Errors (SE) for Recovery Experiences and Occupational Well-being for the Identified Profiles of Boundary Management

<i>Dependent Variable</i>	<i>1 Work Guardians EM (SE)</i>	<i>2 Nonwork Guardians EM (SE)</i>	<i>3 Integrators EM (SE)</i>	<i>4 Separators EM (SE)</i>	<i>5 Intermediate EM (SE)</i>	<i>F-value (df = 4, 1034)</i>	<i>η²</i>	<i>Bonferroni pairwise comparisons (p < .05)</i>
Detachment	2.50 (0.06)	3.23 (0.07)	2.70 (0.06)	3.42 (0.07)	2.98 (0.06)	28.91***	.10	1, 3 < 2, 4, 5 5 < 4
Relaxation	3.54 (0.05)	3.93 (0.06)	3.77 (0.04)	4.05 (0.05)	3.82 (0.05)	13.18***	.05	1 < 2, 3, 4, 5 3, 5 < 4
Mastery	3.43 (0.05)	3.42 (0.06)	3.55 (0.05)	3.42 (0.06)	3.45 (0.05)	1.34	.01	No differences
Control	3.68 (0.05)	4.04 (0.06)	3.90 (0.05)	4.12 (0.06)	3.96 (0.05)	8.70***	.03	1 < 2, 3, 4, 5 3 < 4
Job exhaustion	2.26 (0.11)	1.80 (0.13)	1.90 (0.09)	1.91 (0.11)	1.88 (0.10)	2.68*	.01	1 > 2 ^b , 5 ^b
Vigor at work	4.46 (0.09)	4.37 (0.11)	4.68 (0.07)	4.49 (0.09)	4.58 (0.08)	1.84	.01	No differences

Note. ^a Covariates included gender, age, number of children, level of occupational status, and weekly working hours, which were taken into account in estimated means of ANCOVA models for each dependent variable.

η² = partial squared eta, ^b p < .10, * p < .05, ** p < .01, *** p < .001

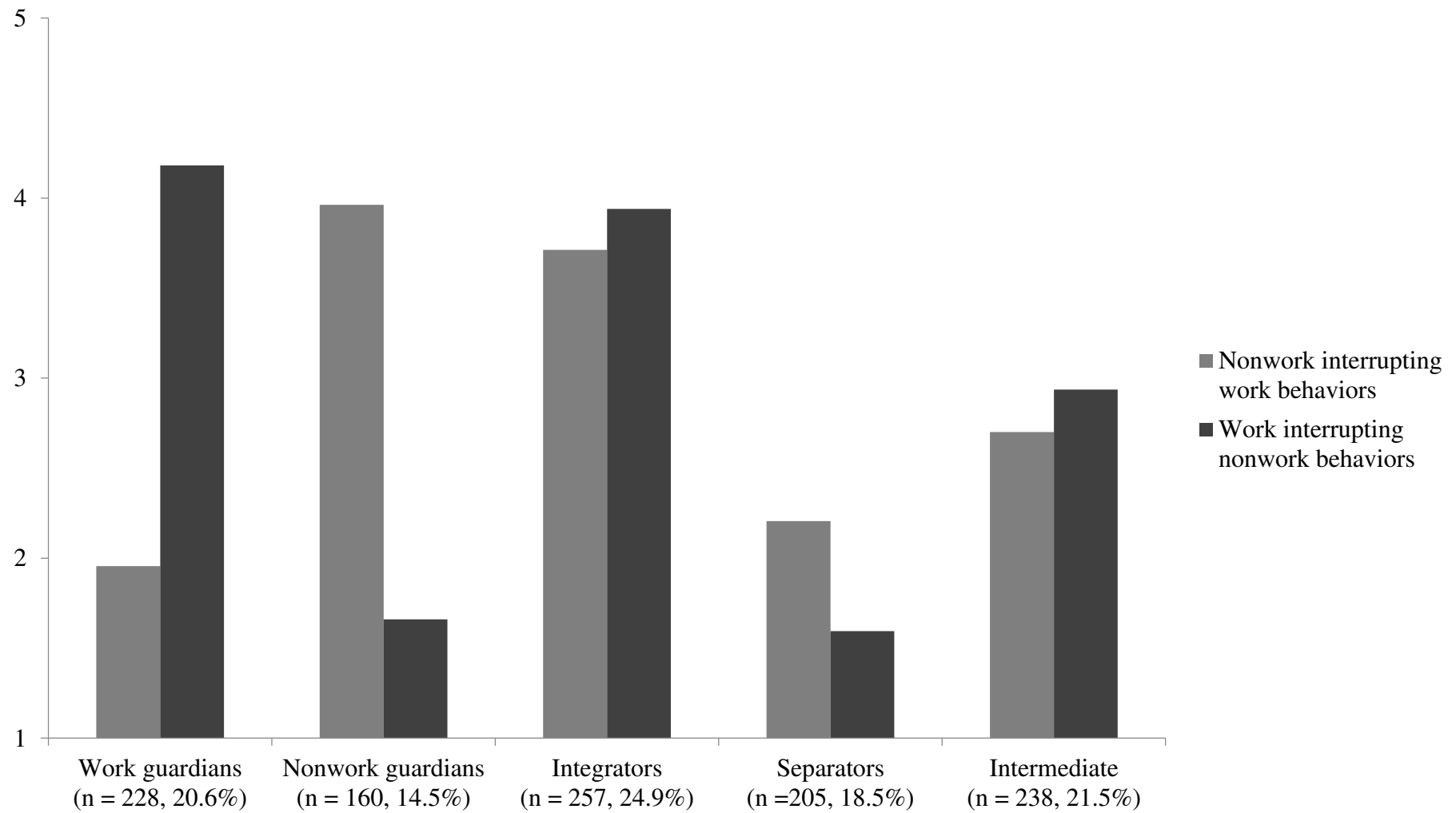


Figure 1. Profiles of boundary management