



# Family boundary permeability, difficulties detaching from work, and work-home conflict: what comes first during the lockdown?

Arūnas Žiedelis<sup>1</sup> · Ieva Urbanavičiūtė<sup>2</sup> · Jurgita Lazauskaitė-Zabielskė<sup>1</sup>

Accepted: 12 July 2022 / Published online: 3 August 2022

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

## Abstract

The challenges posed by the urgent demand of the lockdown to start working from home and successfully manage work-family interface have also triggered the increased boundary permeability, difficulties detaching from work and work-home conflict. However, little is known about the temporal dynamics between these challenges, therefore more research-based data could facilitate not only a better understanding of the risks for employee well-being but also finding the best practices to counteract work-home conflict when working from home. Our study aimed to examine the direction of cross-lagged effects among family boundary permeability, psychological detachment, and work-home conflict in the context of the pandemic. In all, 375 employees participated in a two-wave study. We used structural equation modelling to test and compare several models that were deployed for describing the hypothesised temporal relationships. The results of our study revealed that psychological detachment predicted boundary permeability and work-family conflict four months later, but not vice versa. Thus, the ability to detach from work should not be considered a consequence of low family boundary permeability. Instead, it seems to serve as a strategy to keep work and non-work spheres separate, eventually, to avoid work-family conflict. As a result, practical efforts should focus on helping remote workers to detach from work when they are not working rather than on the prevention of boundary-blurring. Finally, the discussion of the results of the impact of both, the context of the pandemic and the nature of the mandatory transition to working from home is presented and practical guidelines on how organisations may help employees better manage the work and home interface in telework settings are offered.

**Keywords** Family boundary permeability · Psychological detachment · Work-family conflict · Working from home

## Background

Following the lockdown that was aimed at arresting the spread of the coronavirus disease, many employees were

required to handle both work and family role responsibilities in the same limited space of their homes. Unprecedentedly, the rate of employees working from home in Europe during the pandemic has increased to 48%, moreover, approximately half of them were without any previous teleworking experience (Eurofound, 2020). This change was rapid and without proper preparation on behalf of both, the organisations and their employees (Chen, 2021). For example, due to the sudden nature of this transition, less than half of the employees reported having been provided with the equipment needed to work from home by their employers (Eurofound, 2020). Such an urgent demand to start working from home has challenged employee well-being and, more specifically, successful management of the work-home interface (Vaziri et al., 2020). First, being required to work from home blurs or partly erases physical and temporal boundaries between work and private life (Otonkorpi-Lehtoranta et al., 2021). Thus, boundaries around these domains become

---

✉ Arūnas Žiedelis  
arunas.ziedelis@fsf.vu.lt

Ieva Urbanavičiūtė  
ieva.urbanaviciute@unil.ch

Jurgita Lazauskaitė-Zabielskė  
jurgita.lazauskaite@fsf.vu.lt

<sup>1</sup> Institute of Psychology, Organizational Psychology Research Centre, Vilnius University, Universiteto str. 9/1, Room 415, 01513 Vilnius, LT, Lithuania

<sup>2</sup> Senior Researcher Swiss National Centre of Competence in Research LIVES University of Lausanne Geopolis, CH-1015 Building, Lausanne, Switzerland

more permeable (Ashforth et al., 2000; Clark, 2000). Second, working from home impedes psychological detachment due to the increased availability and constant reminders about work (Park et al., 2011). Third, blurred boundaries and the lack of psychological detachment might increase the spillover of the strain from work to home, thereby amplifying work-family conflict (Derks et al., 2016; Dettmers, 2017).

The aforementioned diverse challenges are hard to overcome in practice as it is not always clear which issue needs to be tackled first. Even though boundary permeability, psychological detachment from work and work-family conflict are highly related, they are also distinct phenomena with their dynamics being different over time. However, to the best of our knowledge, no study has investigated the dynamics of these challenges in the context of the pandemic and rapidly implemented lockdown. Although these variables are interrelated, current knowledge about the direction of their effects upon each other is scarce or unidirectional at best. When we lack knowledge of where and when the difficulties of reconciling work and private life come from, it is difficult to select or devise practices that would help in managing the boundaries efficiently and prevent work-home conflict. As a result, it is not easy to maintain the well-being of employees and prepare them for working outside the office. Therefore, we argue that it is crucial to inspect the direction of possible pathways through which psychological detachment connects to boundary permeability and work-family conflict. Furthermore, the findings on these temporal relationships might offer practical insights to facilitate working from home, which is likely to become an established form of working in the future.

Our study aims to fill the gap in the literature regarding the direction of longitudinal cross-lagged effects among family permeability, psychological detachment, and work-family conflict in the context of the pandemic and makes the following contributions. First, we show that the initial psychological detachment from work predicts both, family boundary permeability and work-family conflict but not the other way around. In other words, employees who were better able to detach from work after working hours were less likely to experience boundary-blurring and incompatible pressures between work and family domains. Second, drawing on the conservation of resources (COR) theory (Hobfoll, 2001; Hobfoll et al., 2018), we provide a rationale for why, in the context of the pandemic, a low psychological detachment should be considered an important risk factor for work-family interface management rather than just a consequence of permeable boundaries. Third, we offer practical guidelines on how organisations may help employees better manage the work and home interface in telework by encouraging and enabling them to detach from work after working hours.

## Family boundary permeability

Family boundary permeability refers to the degree to which permeations (i.e., psychological or behavioural elements from other domains, such as worrying about work or performing work-related activities) are allowed to enter the family domain (Ashforth et al., 2000; Matthews & Barnes-Farrell, 2010). Both, boundary (Ashforth et al., 2000) and border (Clark, 2000) theories propose that individuals strive to simplify their environment by enacting and maintaining boundaries around the most important domains of their lives, which most frequently are work and family (Ashforth et al., 2000; Clark, 2000). These boundaries might be physical (as far as they define *where* the domain-relevant behaviour is performed), temporal (*when* it is performed), or psychological (*how* it is performed in terms of appropriate thinking and behavioural patterns as well as rules regulating the expression of emotions) (Clark, 2000). Individuals differ in terms of how permeable their domain boundaries are, and both extremes of boundary permeability have costs and benefits. As boundaries become more permeable, work and non-work roles become more integrated, therefore the transition between the domains becomes easier. Thus, it is easier to switch between the roles, although the interruptions between the domains are more frequent as boundaries become blurred. And vice versa, impermeable boundaries reduce the frequency of interruptions but complicate the transition between the two highly segmented domains (Ashforth et al., 2000).

Mostly, boundary management in general and boundary permeability more specifically are defined by individual preferences and norms within the organisation which determines to what extent work and non-work domains are expected to be separated or integrated (Kreiner, 2006). While some organisations promote the integration by introducing policies aimed at reducing the boundaries between work and family (e.g., telecommuting, flexible schedule, bring-your-child-to-work days), others encourage keeping home and work issues separately (e.g., using different phones for work and personal calls) (Basile & Beauregard, 2018). Moreover, before the pandemic, flexible work was more likely to be a voluntary option than an obligation (Lapierre et al., 2016). The situation changed drastically after the lockdown measures had forced many employees to abandon physical (and often temporal) boundaries overnight, as work had to be performed while staying at home. This was done regardless of previous organisational norms or employee preferences. Such a unique situation is likely to have an unprecedented impact on both family boundary permeability and a subsequent work-family conflict, therefore it provides an opportunity to reexamine the tenets that had been previously established.

## Work-family conflict

Work-family conflict refers to a form of an inter-role conflict when the participation in family roles becomes more complicated due to the participation in work roles because the role pressures from work to family domains are somewhat incompatible (Greenhaus & Beutell, 1985). Such cases emerge when work and family roles compete unsuccessfully for the same limited resources like time (time-based conflict) and effort (strain-based conflict). Both, time- and strain-based conflicts are consistently related to various negative work- and family-specific and unspecific domain outcomes such as satisfaction and productivity in both of these areas (Amstad et al., 2011).

There are several reasons why an employee may have difficulty reconciling work and family responsibilities, and some of them are related to boundary management. Several previous studies have found a positive relationship between family boundary permeability and work-family conflict (Dettmers, 2017; Hyland & Prottas, 2017; Jostell & Hemlin, 2018). The mechanism behind this relationship is twofold. First, permeable family domain boundaries allow elements from the work domain (e.g., phone calls from work, cues reminding about unfinished tasks) to reach employees when they are not working (Ashforth et al., 2000; Matthews & Barnes-Farrell, 2010). These permeations are frequently experienced as the interruptions which reduce one's ability to focus on the primary role and eventually lead to time-based conflicts (Clark, 2000). Second, permeability can also lead to a spillover of negative emotions and attitudes from the work domain as the reminders about work become more present resulting in a strain-based work-family conflict (Hyland & Prottas, 2017). Therefore, we speculate that family boundary permeability will be related to a higher work-family conflict (even when controlling for psychological detachment) and raise our first hypothesis:

H1: Family boundary permeability will have a positive cross-lagged effect on work-family conflict.

## Psychological detachment

Psychological detachment is a mechanism that mitigates the effect of workplace pressures on work-family conflict. The experience of psychological detachment described as the “sense of being away from the work situation” (Etzion et al., 1998, p. 579) is crucial in a successful recovery of employees in terms of the efficiency of their productivity and well-being (Sonnentag & Fritz, 2007; Sonnentag, 2018). Psychological detachment implies abstaining from work tasks and mentally disconnecting from work-related thoughts leading to reduced strain reactions and faster recovery. Although psychological detachment is not the only

experience associated with the recovery from work, previous research has shown it to be related to various aspects of employee well-being, including lower work-family conflict (Sonnentag & Fritz, 2015).

In the context of remote working during the lockdown, we expected psychological detachment to protect employees from work-family conflict for several reasons. First, as the resources such as time and attention needed to fulfill both work and family roles are limited, distancing oneself from work-related tasks and thoughts allows one to perform better in the family domain (Dettmers, 2017). Second, psychological detachment facilitates the employees' recovery from work-related efforts and replenishment of the depleted resources (Sonnentag & Fritz, 2007), and acts as a protective shield from employee exhaustion and a weakened ability to function at work and in other life domains. Third, the context of a pandemic is somewhat different from the usual transition to teleworking since it requires to perform work while being at home and reduces the number of leisure activities that might be undertaken outside one's home. The current research (e.g., Karabinski et al., 2021) shows that the engagement in various leisure activities might facilitate psychological detachment and recovery from work. Still, not all activities might be performed at home. Thus, the lockdown limits the opportunities to engage in recovery-enhancing activities. Finally, since both work and family roles are to be enacted in the same physical environment, the physical and frequently temporal boundaries between work and family dissipate (Otonkorpi-Lehtoranta et al., 2021). Therefore, a psychological detachment from work allows to retain at least a psychological barrier between the two domains. In line with this reasoning, a recent study by Allen et al. (2021) showed that an active involvement in doing things to take the mind off work is one of the most commonly used individual strategies to reduce work-home conflict during the lockdown. Based on this reasoning, we raise our second hypothesis:

H2: A psychological detachment will have a negative cross-lagged effect on work-family conflict.

Since a psychological detachment can be conceptualised either as an experience affected by the external factors at work (including but not limited to the requirement to work from home) or as an individual skill that might be developed, it can be conceived as both an antecedent and consequence of family boundary permeability. In the context of boundary and border theories, a lack of physical (and temporal) boundaries and an increased family boundary permeability are associated with the extended availability and more frequent interruptions from work during the non-work time (Ashforth et al., 2000; Dettmers, 2017). As we have already argued, such interruptions (permeations) might remind the employees about their work, and not only

impede the experience of psychological detachment, but also increase work-home conflict. Following this line of reasoning, permeable physical or temporal boundaries (i.e., having an office at home or using a smartphone to solve work-related issues after working hours) were found to be related to a poor psychological detachment (Sonnentag, Kutler, & Fritz, 2010; Derks et al., 2014). Similarly, Dettmers (2017) found that psychological detachment partly mediates the relationship between the extended availability (a form of family boundary permeability) and work-family conflict. Therefore, taking into account that working from home becomes mandatory, the increased family boundary permeability is quite likely to result in a lower psychological detachment during the lockdown.

On the other hand, based on COR theory (Hobfoll, 2001; Hobfoll et al., 2018), we can also raise the hypotheses about the alternative directions of effects. This theory states that people are motivated to pursue and protect the things that are valuable either by themselves (i.e., primary resources) or because they allow them to achieve things that are valuable (i.e., secondary resources). In addition, the pre-existing resources help acquire new ones (i.e., resource gain; cf. Hobfoll et al., 2018). Given that home-work segmentation is a common strategy to avoid inter-role conflicts and protect the family domain (Kreiner, 2006), a low family boundary permeability and psychological detachment may represent secondary resources that enable keeping work and home domains separate, eventually, assisting in acquiring the primary resource of a well-balanced work-family interface. Moreover, COR theory suggests that individuals use the available resources to protect themselves from the resource loss (Hobfoll et al., 2018). Thus, when boundaries became more permeable following the transition to working from home, the work-home interface (in terms of boundary permeability and work-home conflict) might be protected by the resource of psychological detachment. In this case, psychological detachment could be better conceptualised as a self-regulatory skill that prevents unwanted interruptions from work, leading at least to the fortification of the psychological boundaries between work and family and reduction of work-family conflict (Smit, 2016). Such conceptualisation is also more easily compatible with the current research, showing that psychological detachment might be trained through various individual-level interventions (Althammer et al., 2021; Ebert et al., 2015).

Although this conceptualisation is less established in the literature, we speculate that it might have become especially relevant in the context of the pandemic for several reasons. First, unlike in the past, the transition to working from home was not planned in advance. For this reason, most employees received only limited or no support from their organisations. They had to rely on their own resources while dealing

with newly emerged challenges to manage work and home interfaces (Chen, 2021). Thus, the importance of various individual skills that help manage home and work interfaces has only increased. Second, previous research showed that psychological detachment is affected by a myriad of individual and work factors that are not directly related to boundary issues, such as high workload, interpersonal conflicts, emotion regulation, mindfulness (Sonnentag & Fritz, 2015; Wendsche & Lohmann-Haislah, 2017; Karabinski et al., 2021). Thus, even before the pandemic had struck, there were individual differences in the ability to detach from work due to unequal skills or working conditions. Finally, as the lockdown reduced the number of leisure activities performed outside working hours and employees were forced to spend almost all of their time at home, the physical and temporal boundaries between work and family ceased to exist. Consequently, psychological boundaries remained the only means of separating work from non-work. Thus, we speculate that employees who were better able to detach from work psychologically (because of their self-regulatory skills or more favourable work context) were better able to protect their family domain from undesirable permeation from work and experienced lower work-family conflict.

Having in mind that the direction of effects between family boundary permeability and psychological detachment is somewhat debatable, we raise two different hypotheses regarding the relationship between these constructs:

H3a: Family boundary permeability will have a negative cross-lagged effect on psychological detachment.

H3b: Psychological detachment will have a negative cross-lagged effect on family boundary permeability.

## Methods

### Sample and procedure

Two study waves were conducted in November 2020 and March 2021 during the second lockdown imposed to limit the spread of the coronavirus disease. The first lockdown was introduced in March 2020, followed by a brief return to a more or less ordinary lifestyle before the re-introduction of another lockdown in November 2020. This second lockdown lasted until June 2021; therefore, the first study wave was conducted at the beginning of the second quarantine, while the second wave took place four months later.

The participants were recruited through network sampling with the help of student research assistants. An initial heterogeneous sample of 883 employees from [the country is not shown in this review] participated in the first wave. After completing the online questionnaire, they were asked to express their consent to be surveyed longitudinally by

providing a contact e-mail address. In total, 375 emails were received (a positive response rate – 42.5%). After sending out the invitations to participate in the second wave, 235 respondents filled out the questionnaire for a second time (longitudinal sample response rate – 62.7%). We conducted a dropout analysis by comparing those who participated in both study waves with those who dropped out due to sociodemographic and psychological variables. Most differences between the groups were non-significant, except that dropped out participants were somewhat younger (31.8 vs. 35.9 years;  $t = -3.339$ ,  $df = 339$ ,  $p = .001$ ) and less likely to work in the public sector (32.1% vs. 42.6%;  $\chi^2 = 4.009$ ,  $df = 1$ ,  $p = .045$ ). Given the dropout analysis did not provide a basis for considering systematic attrition bias, the hypotheses were tested on the full longitudinal sample ( $N = 375$ ), using the FIML estimator to account for the missing data.

The longitudinal sample consisted of 286 women and 89 men ranging in age from 18 to 65 years ( $M = 34.4$ ;  $SD = 12.4$ ). In all, 61.3% of the respondents worked in the public sector while 38.7% represented the private sector, the average work experience of the subjects was 6.4 years ( $SD = 8.3$  years). The majority of participants had a full-time job (81.3%) and worked from home for an average of 4.3 days per week.

## Measures

The respondents were asked to provide demographic data and fill out a questionnaire including the items to assess family permeability, psychological detachment, and work-home conflict.

*Family boundary permeability* was measured with one subscale obtained from the Enhanced Measure of Boundary Flexibility (Matthews & Barnes-Farrell, 2010). The subscale consisted of four items, rated on a seven-point Likert-type scale, ranging from 1 – totally disagree to 7 – totally agree. A sample item was: “I stop in the middle of my home activities to address a work concern”.

*Psychological detachment* was assessed by one subscale obtained from the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007). The subscale consisted of four items, rated on a five-point Likert-type scale, ranging from 1 – totally disagree to 5 – totally agree. A sample item was: “During the time after work, I forget about work”.

*Work-home conflict* was measured by four negative work-home interaction items obtained from the SWING questionnaire (Geurts, Taris, Kompier, Dikkers, Van Hooff, Kinnunen, et al., 2005). The items were rated on a five-point Likert-type scale, ranging from 1 – never to 5 – always/almost always. A sample item was: “How often does it happen that your work schedule makes it difficult for you to fulfill your domestic obligations?”.

**Table 1** Model fit indices for the confirmatory factor analysis models

Model	chi-square	df	CFI	RMSEA
1 factor	561.67***	54	0.69	0.20
2 factors ( <i>single FP and DT factor</i> )	348.58***	53	0.82	0.15
2 factors ( <i>single FP and WHC factor</i> )	341.13***	53	0.82	0.15
2 factors ( <i>single DT and WHC factor</i> )	423.36***	53	0.78	0.17
3 factors	171.43***	51	0.92	0.10

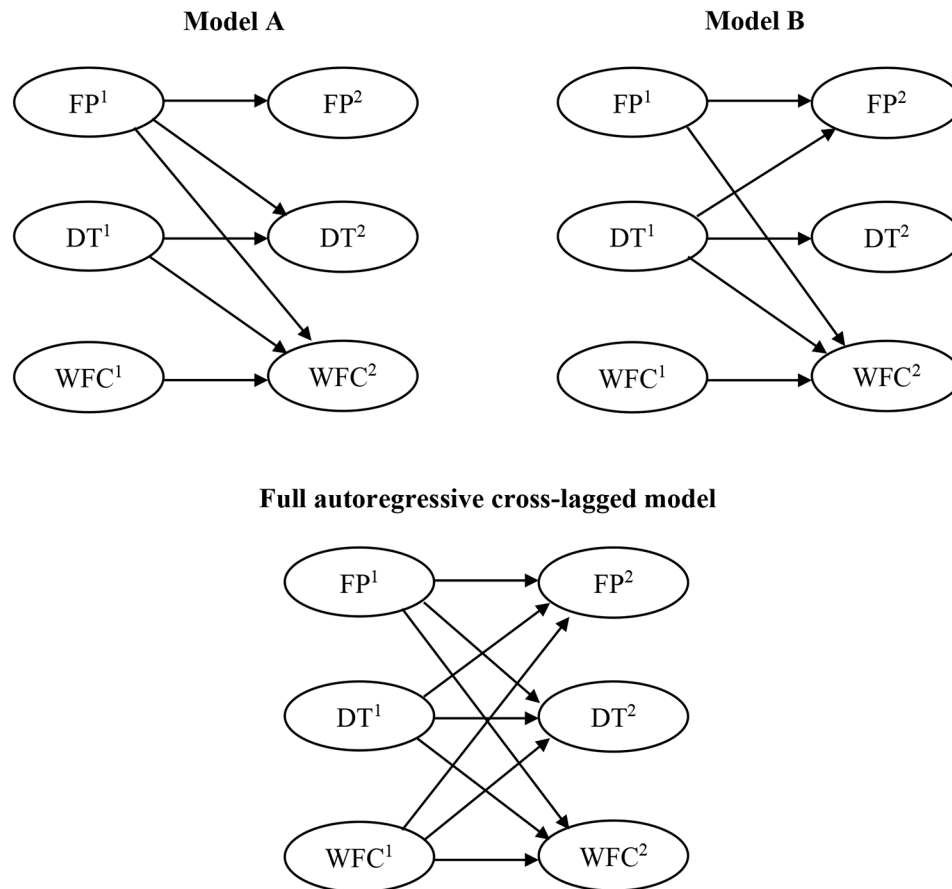
**Notes.** FP=Family permeability, DT=Psychological detachment, WHC=Work-home conflict. \*\*\* $p < .001$

## Data analysis

As family boundary permeability, psychological detachment, and work-home conflict are interrelated constructs, the confirmatory factor analysis (CFA) with the maximum likelihood (ML) estimation was applied to test the factorial structure of our study measures. More specifically, we tested five different CFA models: a single-factor model, three 2-factor models (showing all possible combinations of two-factor solutions), and a hypothesised 3-factor model. Our results (see Table 1) confirmed the 3-factor model to have a better fit than the single-factor model ( $\Delta\chi^2 = 390.235$ ,  $\Delta df = 3$ ,  $p < .001$ ) or each of the 2-factor models ( $\Delta\chi^2 \geq 169.696$ ,  $\Delta df = 2$ ,  $p < .001$ ).

All the measures were tested for the longitudinal measurement invariance before testing cross-lagged models. We tested the configural and metric invariance (Putnick & Bornstein, 2016) to establish the equivalence of the model form and factor loadings at both time points. The metric invariance was observed if the Comparative Fit Index (CFI) decreased by less than 0.01 and the Root Mean Square Error of Approximation (RMSEA) increased by less than 0.015 after imposing constraints on factor loadings (Chen, 2007).

We used structural equation modeling (ML estimator) with IMB AMOS 20.0 to estimate the autoregressive and cross-lagged relationships between the main study variables (i.e., family permeability, psychological detachment, work-home conflict). To test our hypotheses regarding the direction of effects over time, we compared several cross-lagged models in the sequence from fully reciprocal (least degrees of freedom) to the most parsimonious one. First, a full model that included all possible autoregressive and cross-lagged paths was estimated to be used as a reference model for subsequent models. Second, we tested both the hypothesised models A and B in parallel (see Fig. 1) since they had the same number of parameters (and degrees of freedom). Model A is based on the Boundary theory (Ashforth et al., 2000; Clark, 2000) and rests on the assumption that psychological detachment is an experience that can deteriorate due to the increased family boundary permeability (and thus



**Fig. 1** Research models. **Notes.** FP = family boundary permeability, DT = detachment, WFC = work-family conflict. For the sake of parsimony, observed variables and covariations among latent factors are not presented.

more frequent interruptions during non-work time). For this reason, lower psychological detachment should be preceded by the increased family boundary permeability and be negatively related to subsequent work-family conflict. Model B is based on COR theory's (Hobfoll et al., 2018) assumption that psychological detachment enables employees to protect their functioning in the family domain by retaining a psychological barrier between work and non-work. Thus, they can better separate work and family domains (i.e., have a lower family boundary permeability) and experience a lower work-home conflict. Finally, we tested the autoregressive model with no cross-lagged relationships between the study variables. According to the principle of parsimony, when competing structural models fit data equally well, the most parsimonious (i.e., the simplest) of them should be selected (Preacher, 2006).

## Results

The correlations between the main variables are presented in Table 2. As expected, all the main variables were significantly interrelated, with the correlation coefficients among the latent variables ranging (in absolute value) from 0.42 to 0.70. In addition, some temporal dynamics were observed across the two measurements. While differences in the levels of psychological detachment and work-home conflict measured at time 1 and time 2 were non-significant ( $p > .05$ ), the sample mean of family boundary permeability significantly increased over time ( $t = -3.961$ ,  $df = 235$ ,  $p < .001$ ).

Before estimating autoregressive and cross-lagged effects, we tested the measurement invariance across both time points. The configural model showed the acceptable CFI and RMSEA indices ( $\chi^2 = 552.292$ ,  $df = 225$ ,  $p < .001$ ; CFI = 0.928; RMSEA = 0.062), only trivial changes were found/detected in these indices after imposing additional constraints to the metric model ( $\chi^2 = 560.379$ ,  $df = 234$ ,  $p < .001$ ; CFI = 0.928; RMSEA = 0.061). Thus, longitudinal metric invariance was observed.

**Table 2** Descriptive statistics and correlations between the main variables

	M	SD	1	2	3	4	5	6
1. FP <sub>1</sub>	4.7	1.5	(0.80/0.81)	0.55***	−0.62***	−0.42***	0.58***	0.48***
2. FP <sub>2</sub>	5.1	1.4	0.48***	(0.81/0.81)	−0.50***	−0.63***	0.46***	0.70***
3. DT <sub>1</sub>	3.0	0.9	−0.50***	−0.40***	(0.90/0.90)	0.65***	−0.60***	−0.42***
4. DT <sub>2</sub>	2.9	0.9	−0.32***	−0.51***	0.60***	(0.89/0.89)	−0.47***	−0.66***
5. WHC <sub>1</sub>	2.6	1.0	0.49***	0.38***	−0.57***	−0.41***	(0.87/0.87)	0.68***
6. WHC <sub>2</sub>	2.7	1.0	0.39***	0.56***	−0.48***	−0.59***	0.62***	(0.87/0.87)

**Notes.** FP=Family permeability, DT=Psychological detachment, WHC=Work-home conflict. Subscript indices refer to the study wave (T1 or T2). Manifest correlations are presented below the diagonal, latent correlations are presented above the diagonal, Cronbach’s alpha/McDonald’s Omega coefficients are presented on the diagonal. \*\*\* $p < .001$

**Table 3** Model comparison results

Paths (standardized regression weights)	Models			
	Full cross-lagged model	Hypothesized model A	Hypothesized model B	Autoregressive model
FP <sub>1</sub> →FP <sub>2</sub>	0.31**	0.54***	0.35***	0.46***
DT <sub>1</sub> →DT <sub>2</sub>	0.57***	0.54***	0.65***	0.56***
WHC <sub>1</sub> →WHC <sub>2</sub>	0.51***	0.43***	0.43***	0.60***
FP <sub>1</sub> →DT <sub>2</sub>	0.01	−0.07		
FP <sub>1</sub> →WHC <sub>2</sub>	0.04	0.13	0.06	
DT <sub>1</sub> →FP <sub>2</sub>	−0.25*		−0.33**	
DT <sub>1</sub> →WHC <sub>2</sub>	−0.23*	−0.15	−0.27**	
WHC <sub>1</sub> →FP <sub>2</sub>	0.15			
WHC <sub>1</sub> →DT <sub>2</sub>	−0.12			
Explanatory power (R <sup>2</sup> )				
FP <sub>2</sub>	0.35	0.34	0.35	0.28
DT <sub>2</sub>	0.43	0.40	0.43	0.36
WHC <sub>2</sub>	0.49	0.45	0.47	0.41
Model fit measures				
χ <sup>2</sup>	560.38***	572.55***	564.19***	584.96***
df	234	237	237	240
Δχ <sup>2</sup>	−	12.17**	3.81	24.58***
RMSEA	0.06	0.06	0.06	0.06
CFI	0.93	0.93	0.93	0.92

**Notes:** FP=Family permeability, DT=Psychological detachment, WHC=Work-home conflict, Δχ<sup>2</sup>–chi-square difference from the full model, Subscript indices refer to the study wave (1st or 2nd), \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

The results of structural equation modeling (Table 3) showed that the hypothesised model B was superior in terms of parsimony and fit to the data compared to other models. First, the chi-square difference test showed that model A ( $\Delta\chi^2 = 12.170, \Delta df = 3, p = .007$ ) and autoregressive model ( $\Delta\chi^2 = 24.577, \Delta df = 6, p < .001$ ) differed significantly from the full model but model B fit the data equally well ( $\Delta\chi^2 = 3.807, \Delta df = 3, p = .283$ ) despite being more parsimonious. Second, two out of three cross-lagged effects in model B were significant (specifically, psychological

detachment predicted family permeability and work-home conflict four months later), which was not the case in model A. Finally, in terms of explanatory power (R<sup>2</sup>), model B was somewhat superior to model A in predicting T2 family boundary permeability ( $\Delta R^2 = 0.009$ ), psychological detachment ( $\Delta R^2 = 0.036$ ), and work-home conflict ( $\Delta R^2 = 0.019$ ).

The model comparison revealed several essential insights regarding our study hypotheses. First, the cross-lagged relationship between family boundary permeability and work-family conflict was non-significant when the effect of psychological detachment was taken into consideration. Thus, our first hypothesis regarding a positive cross-lagged effect of family permeability on work-family conflict was not supported. Furthermore, psychological detachment negatively predicted subsequent work-family conflict, thus supporting our second hypothesis. Finally, regarding the direction of the effect between family boundary permeability and psychological detachment, psychological detachment inversely predicted family boundary permeability, thus supporting our H3b hypothesis but not H3a.

## Discussion

The introduction of the lockdown to control the spread of the coronavirus created an extraordinary context for employees across the globe. For most employees, it meant that ability to work in the office and the variety of outside leisure activities were significantly reduced. For these reasons, work and family roles had to be performed mainly in the same limited space of people’s homes in line with facing additional challenges to manage the work and family interface. This study adopted a longitudinal approach to investigate the difficulties emerging from the interaction between work and family spheres, such as family boundary permeability, low psychological detachment and work-family conflict.

Our research allowed us to longitudinally test several theoretical assumptions in the exclusive context of the swiftly implemented lockdown. Previous literature has led us to hypothesise that higher family boundary permeability should longitudinally predict greater work-family

conflict. More precisely, we have expected that as boundaries become more permeable, the so-called boundary-blurring occurs, which increased the frequency of interruptions from work while not working thus producing greater work-family conflict. Contrary to our expectations, this tenet was not supported by our results. Although family boundary permeability was positively associated with work-family conflict, this association ceased to exist when autoregressive effects and the effect of psychological detachment were taken into consideration. At the very least, it means that as employees were forced to immediately start working remotely, the effect of boundary-blurring on the ability to perform one's role in the family successfully is somewhat negligible as long as the employee can successfully detach himself or herself from work. Boundary theory suggests that as family boundary permeability increases, various interruptions from the work domain become more common (Ashforth et al., 2000). Since these interruptions require such limited resources as time and attention, an employee's ability to perform his or her family roles is reduced, thus producing work-family conflict (Dettmers, 2017), and this insight was supported by several cross-sectional studies conducted before the pandemic (Dettmers, 2017; Hyland & Prottas, 2017; Jostell & Hemlin, 2018). However, our research suggests that family boundary permeability might not be a reliable predictor of future work-family conflict, as increased boundary permeability does not necessarily lead to lower psychological detachment (we shall return to this point soon). In other words, the mere fact that the boundaries between work and home have become more permeable does not mean that it will be more difficult for an employee to reconcile work and family responsibilities as long as he is able to detach from work.

Moreover, the results of our study showed a negative cross-lagged effect of the initial psychological detachment to later work-family conflict. The employees who were better able to abstain from work-related tasks and thoughts during the nonworking time reported a lower inter-domain conflict four months later. These results are in agreement with other studies, showing that being able to detach from work after working hours allows for replenishing depleted resources, protects from exhaustion, and allows to direct such limited resources as time and attention to fulfil the requirements of other roles (Dettmers, 2017; Sonnentag & Fritz, 2015). Most importantly, pre-pandemic research highlights that permeable boundaries can expose workers to more disruption from work in their spare time, which negatively affects their ability to function in the family (Dettmers, 2017; Hyland & Prottas, 2017; Jostell & Hemlin, 2018). Our results have revealed that in the context of the disappearance of physical and time boundaries between work and non-work, the ability to psychologically distance oneself from work is more

important than simply maintaining boundaries and avoiding boundary-blurring. In other words, employees who were better able to detach from work-related tasks and thoughts experienced less work-family conflict even when family boundaries became permeable during the lockdown. Such findings have some important practical implications that we shall discuss shortly.

In addition to that, low psychological detachment appeared to be more relevant as a predictor of the work-home interface rather than an outcome of boundary permeability. Our results revealed that psychological detachment longitudinally predicted both family boundary permeability and work-family conflict but not vice versa. In other words, as employees were required to transit to remote working, difficulties to detach from work-related thoughts and behaviours occurred first. They were later followed by boundary-blurring and diminished ability to meet the demands within the family domain. These results are in contrast with the boundary theory (Ashforth et al., 2000) and previous research (Derks et al., 2014; Sonnentag, Kutler, & Fritz, 2010), showing psychological detachment to be reduced by more frequent interruptions from work due to high family boundary permeability. However, they make sense when we conceptualise psychological detachment as a self-regulatory skill, which can be fostered and improved (Smit, 2016). It was established previously that psychological detachment could be enhanced by various means, some of which are not directly related to work-family interactions (Althammer et al., 2021; Ebert et al., 2015; Karabinski et al., 2021). Most recently, Althamer et al. (2021) have shown that mindfulness-based intervention enables detachment from work, the effect of which is even stronger among the employees who prefer to keep work and family domains integrated. Our results suggest that the enhanced psychological detachment might be beneficial in avoiding both boundary permeability and work-family conflict. Such findings have important theoretical and practical implications that deserve to be discussed more in detail.

## Theoretical implications

The main theoretical implication of this study is related to the role of psychological detachment in the context of transition to remote working because of the lockdown. Although some pre-pandemic studies (Derks et al., 2014; Sonnentag, Kutler, & Fritz, 2010) suggest that boundary permeability may cause poorer psychological detachment, the results of our study showed that the direction of effect may also be reversed. We speculate that the direction of effect between psychological detachment and family boundary permeability might be context-specific. What is valid under normal circumstances may not be valid under turbulent pandemic



conditions, when help from the organization becomes less available and employees have to rely on their own internal resources.

Based on COR theory (Hobfoll et al., 2018), we consider that the resources such as the ability to distance oneself from work and low family boundary permeability are interchangeable. In other words, although in ordinary circumstances employees might seek to limit permeations from work so as to help themselves detach from work-related thoughts and activities, it might as well work the other way round. Employees can use their psychological detachment skills to maintain psychological boundaries between work and family domains and thus reduce the permeability of boundaries when the situation requires it. The pandemic context is crucial as it creates a situation that is not analogous to the usual transition to remote working, which was more likely to be voluntary and gradual (Lapierre et al., 2016). Since this transition was enforced to control the threatening spread of the coronavirus, it was rapid, obligatory, and without proper preparation (Chen, 2021; Eurofound, 2020). In such a turbulent environment, the organisational support systems became less reliable as in many cases organisations could do little to help their employees adjust to working from home.

Such a rapid transition has affected the permeability of boundaries between work and non-work, thus impeding psychological detachment. However, being able to leave work behind might also be affected by various other job-related factors, such as high demands and low resources (Wendsche & Lohmann-Haislah, 2017), availability expectations (Dettmers, 2017), and the supervisor's detachment (Sonnentag & Schiffrer, 2019). For example, a reduced workload during the pandemic may foster psychological detachment even though an employee is required to work from home. Second, we are aware of the research literature showing that psychological detachment can be improved through such individual-level interventions as engagement in meaningful leisure time activities (Mojza et al., 2011), creating time boundaries around technology use (Barber & Jenkins, 2014), CBT based online psychoeducation (Ebert et al., 2015), and mindfulness interventions (Althammer et al., 2021). Above all else, it means that psychological detachment from work can be cultivated at the individual level and be a beneficial resource that allows employees to adapt and successfully manage the work-family interface in turbulent times. The results of our study suggest that psychological detachment is one of the essential resources that should be developed to be able to successfully work from home.

## Practical implications

Our study revealed the importance of psychological detachment for employees who transit to working from home. More specifically, we found that employees, who were better able to abstain from work-related thoughts and activities during their off-work time, were more successful in managing their work and family interface four months later. On the practical side, this means two things. First, it means that the employee's inability to detach from work signals a greater risk of work-home conflict. For this reason, the ability to psychologically distance oneself from work should be included in employee well-being monitoring systems available to organisations, as its early detection, training, and awareness-raising can prevent work-family conflict and its consequences. Second, our study revealed that psychological detachment is an essential resource that is useful in maintaining work-family boundaries and reducing conflict between different roles. As a result, organisations should ensure that their employees can distance themselves from their work during leisure time before initiating work from home. For example, organisations could establish explicit norms regarding the expected availability via communication technologies and support employees' right to be disconnected from work (Dettmers, 2017). Moreover, having in mind that a supervisor's ability to switch off from work encourages psychological detachment among subordinates (Sonntag & Schiffrer, 2019), supervisors should act as role models, signaling the importance of recovery and engagement in non-work activities during leisure time. Finally, providing training to educate methods and skills that allow for distancing oneself from work after working hours (such as context manipulation, engagement in personally meaningful activities, the boundary around technology use management) is highly encouraged.

## Limitations and future research directions

Several study limitations should be taken into consideration when interpreting the results. First, our study was conducted on a moderately-sized convenience sample of somewhat younger employees (mean age – 35.9 years), and an overall response rate (calculated from the total initial sample,  $N=883$ ) was less than 30% thus, the results should be interpreted with caution, especially for the elderly population. It is also worth noting that 76% of our sample were women. Given that in many cases women have more responsibilities in the family due to unequal normative expectations, it is possible that in the sample of men, the link between psychological detachment and work-family conflict would be somewhat weaker. Second, the fit indices of 3 factor CFA model were relatively low (see Table 1), especially when

evaluated according to the dynamic fit index cutoffs for this particular model ( $RMSEA \leq 0.05$ ;  $CFI \geq 0.98$ ; McNeish & Wolf, 2021). Although CFA confirmed our constructs to be separate (i.e., a 3-factor solution was superior to a 1- or 2-factor solution), their measures were far from perfect. Third, one drawback of cross-lagged autoregressive models is that they do not account for the inter-individual differences in stability over time (Selig & Little, 2012). In other words, such models assume that the autoregressive and cross-lagged effects are uniform in the whole sample, which might not be the case when talking about the context-dependent phenomena of the work-family interface. Thus, future research would benefit from analytic approaches that inspect within-person dynamics. Third, we measured global detachment from work as a unidimensional construct in this study. However, detachment might be a multifaced phenomenon composed of various work-related aspects (i.e., goals, interpersonal relations, justice-related events) related to different triggers and might be unequally difficult to detach from (Smit, 2016). For example, while working remotely, it might be more difficult to detach from work-related tasks than from interpersonal relations. Thus, future studies would benefit from considering various aspects of psychological detachment. Finally, our results suggest that psychological detachment precedes other work and family interface challenges, but we have not measured the reasons behind low detachment. Other significant personal or organisational variables that were not included in the current analyses may explain interindividual differences in the detachment experiences. Therefore, future research should take the individual and organisational context into consideration.

Future studies would also make sense to assess how the relationship between psychological detachment and boundary permeability depends on employee preferences to segment versus integrate work and home domains. According to COR theory (Hobfoll et al., 2018), low family boundary permeability for work-related issues can be considered a resource that reduces work-home conflict. Still, the importance of this resource to the employee depends on the centrality of different life domains (i.e., work and family) and the preferences to keep them separate (i.e., segmentation preference; Kreiner 2006). As a result, the strength and direction we observed in the relationship between variables may be more characteristic of employees who prefer to separate work and family and consider family to be a more important domain. Moreover, a recent study by Althammer et al. (2021) revealed that the effect of interventions to promote psychological detachment and reduce work-family conflict might also depend on segmentation preferences. Thus, employee segmentation preferences are important not only theoretically but also practically.

## Conclusions

The sudden transition to working from home has been a tough challenge for both the organisations and the people working there. Our results revealed that psychological detachment may represent a necessary resource, that is also an early indicator of an employee's ability to successfully manage the interface of work and family domains during the transition to remote working during the lockdown. Individuals who could leave work behind were better protected from boundary-blurring and work-family conflict in these challenging pandemic circumstances. Therefore, organisations should monitor their employees' psychological detachment and encourage them to switch off both behaviorally and mentally from work-related issues, thus enabling them to function effectively in various domains of life.

**Author's Contribution** All authors contributed to the study conception and design. Data collection and analysis were performed collectively by all authors. The first draft of the manuscript was written by the corresponding author and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

**Data Availability** The data that support the findings of this study are available from the corresponding author upon reasonable request. Data for this publication were collected during an ongoing project. After the completion of this project, all datasets will be made publicly available in the MIDAS repository at <https://midas.lt/public-app.html#/midas?lang=en>.

**Declarations** The research leading to these results received funding from the Research Council of Lithuania under Grant Agreement No. S-MIP-20-1. All procedures performed in this study were in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in this study. The authors have no competing interests to declare that are relevant to the content of this article. The data that support the findings of this study are available from the corresponding author upon reasonable request.

## References

- Allen, T. D., Merlo, K., Lawrence, R. C., Slutsky, J., & Gray, C. E. (2021). Boundary management and work-nonwork balance while working from home. *Applied Psychology, 70*(1), 60–84. <https://doi.org/10.1111/apps.12300>
- Althammer, S. E., Reis, D., van der Beek, S., Beck, L., & Michel, A. (2021). A mindfulness intervention promoting work-life balance: How segmentation preference affects changes in detachment, well-being, and work-life balance. *Journal of Occupational and Organizational Psychology, 94*, 282–308. <https://doi.org/10.1111/joop.12346>
- Amstad, F. T., Maier, L. L., Fasel, U., Elfering, A., & Semmer, N. K. (2011). A Meta-Analysis of Work-Family Conflict and Various Outcomes With a Special Emphasis on Cross-Domain Versus Matching-Domain Relations. *Journal of Occupational Health Psychology, 16*(2), 151–169. <https://doi.org/10.1037/a0022170>
- Ashforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a day's work: Boundaries and micro role transitions. *Academy of*

- Management Review*, 25(3), 472–491. <https://doi.org/10.5465/AMR.2000.3363315>
- Barber, L. K., & Jenkins, J. S. (2014). Creating Technological Boundaries to Protect Bedtime: Examining Work–Home Boundary Management, Psychological Detachment, and Sleep. *Stress & Health*, 30, 259–264. <https://doi.org/10.1002/smi.2536>
- Basile, K., & Beaugard, T. A. (2018). Oceans apart: work-life boundaries and the effects of an oversupply of segmentation. *The International Journal of Human Resource Management*, 32(5), 1139–1170. <https://doi.org/10.1080/09585192.2018.1512513>
- Chen, Z. (2021). Influence of Working From Home During the COVID-19 Crisis and HR Practitioner Response. *Frontiers in psychology*, 12, 710517. <https://doi.org/10.3389/fpsyg.2021.710517>
- Chen, F. F. (2007). Sensitivity of Goodness of Fit Indexes to Lack of Measurement Invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 14(3), 464–504. <https://doi.org/10.1080/10705510701301834>
- Clark, S. C. (2000). Work/family border theory: a new theory of work/family balance. *Human Relations*, 53(6), 747–770. <https://doi.org/10.1177/0018726700536001>
- Derks, D., Bakker, A. B., Peters, P., & van Wingerden, P. (2016). Work-related smartphone use, work-family conflict and family role performance: The role of segmentation preference. *Human Relations*, 69(5), 1045–1068. <https://doi.org/10.1177/0018726715601890>
- Derks, D., van Mierlo, H., & Schmitz, E. (2014). A diary study on work-related smartphone use, psychological detachment, and exhaustion: Examining the role of the perceived segmentation norm. *Journal of Occupational Health Psychology*, 19(1), 74–84. <https://doi.org/10.1037/str0000014>
- Dettmers, J. (2017). How extended work availability impairs well-being – The role of detachment and work-family-conflict. *Work and Stress*, 31(1), 24–41. <https://doi.org/10.1080/02678373.2017.1298164>
- Ebert, D. D., Berking, M., Thiart, H., Riper, H., Laferton, J. A. C., Cuijpers, P., et al. (2015). Restoring Depleted Resources: Efficacy and Mechanisms of Change of an Internet-Based Unguided Recovery Training for Better Sleep and Psychological Detachment From Work. *Health Psychology*, 34, 1240–1251. <https://doi.org/10.1037/hea0000277>
- Etzion, D., Eden, D., & Lapidot, Y. (1998). Relief from job stressors and burnout: Reserve service as a respite. *Journal of Applied Psychology*, 83, 577–585. <https://doi.org/10.1037/0021-9010.83.4.577>
- Eurofound (2020). *Living, working and COVID-19, COVID-19 series*. Luxembourg: Publications Office of the European Union
- Greenhaus, J., & Beutell, N. (1985). Sources of conflict between work and family roles. *The Academy of Management Review*, 10, 76–88. <https://doi.org/10.5465/amr.1985.4277352>
- Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dikkers, J. S. E., Van Hooff, M. L. M., & Kinnunen, U. M. (2005). work-home interaction from a work psychological perspective: Development and validation of a new questionnaire, the SWING. *Work & Stress: An International Journal of Work Health & Organisations*, 19(4), 319–339. <https://doi.org/10.1080/02678370500410208>
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. *Applied Psychology: An International Review*, 50(3), 337–421. <https://doi.org/10.1111/1464-0597.00062>
- Hobfoll, S. E., Halbesleben, J., Neveu, J. P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 103–128. <https://doi.org/10.1146/annurev-orgpsych-032117-104640>
- Hyland, M., & Prottas, D. (2017). Looking at spillover from both sides: an examination of work and home flexibility and permeability. *Community work & family*, 20(2), 181–200. <https://doi.org/10.1080/13668803.2016.1166097>
- Jostell, D., & Hemlin, S. (2018). After-hours teleworking and boundary management: Effects on work-family conflict. *Work (Reading, Mass.)*, 60(3), 475–483. <https://doi.org/10.3233/WOR-182748>
- Karabinski, T., Haun, V. C., Nübold, A., Wendsche, J., & Wegge, J. (2021). Interventions for improving psychological detachment from work: A meta-analysis. *Journal of Occupational Health Psychology*, 26(3), 224–242. <https://doi.org/10.1037/ocp0000280>
- Kreiner, G. E. (2006). Consequences of work-home segmentation or integration: a person-environment fit perspective. *Journal of Organizational Behaviour*, 27, 485–507. <https://doi.org/10.1002/job.386>
- Lapierre, L. M., Van Steenbergen, E. F., Peeters, M. C., & Kluwer, E. S. (2016). Juggling work and family responsibilities when involuntarily working more from home: A multiwave study of financial sales professionals. *Journal of Organizational Behavior*, 37(6), 804–822. <https://doi.org/10.1002/job.2075>
- Matthews, R. A., & Barnes-Farrell, J. L. (2010). Development and initial evaluation of an enhanced measure of boundary flexibility for the work and family domains. *Journal of Occupational Health Psychology*, 15(3), 330. <https://doi.org/10.1037/a0019302>
- McNeish, D., & Wolf, M. G. (2021). Dynamic fit index cutoffs for confirmatory factor analysis models. *Psychological Methods*. Advance online publication. <https://doi.org/10.1037/met0000425>
- Mojza, E. J., Sonnentag, S., & Bornemann, C. (2011). Volunteer work as a valuable leisure time activity: A day-level study on volunteer work, non-work experiences, and well-being at work. *Journal of Occupational and Organizational Psychology*, 84, 123–152. <https://doi.org/10.1348/096317910X485737>
- Otonkorpi-Lehtoranta, K., Salin, M., Haovirta, M., & Kaittila, A. (2021). Gendering boundary work: Experiences of work-family practices among Finnish working parents during COVID-19 lockdown. *Gender, Work & Organization*. <https://doi.org/10.1111/gwao.12773>
- Park, Y., Fritz, C., & Jex, S. M. (2011). Relationships between work-home segmentation and psychological detachment from work: the role of communication technology use at home. *Journal of occupational health psychology*, 16(4), 457. <https://doi.org/10.1037/a0023594>
- Preacher, K. J. (2006). Quantifying Parsimony in Structural Equation Modeling. *Multivariate Behavioral Research*, 41(3), 227–259. [https://doi.org/10.1207/s15327906mbr4103\\_1](https://doi.org/10.1207/s15327906mbr4103_1)
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement Invariance Conventions and Reporting: The State of the Art and Future Directions for Psychological Research. *Developmental Review*, 41, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (pp. 265–278). The Guilford Press
- Smit, B. W. (2016). Successfully leaving work at work: The self-regulatory underpinnings of psychological detachment. *Journal of Occupational and Organizational Psychology*, 89, 493–514. <https://doi.org/10.1111/joop.12137>
- Sonnentag, S. (2018). The recovery paradox: Portraying the complex interplay between job stressors, lack of recovery, and poor well-being. *Research in Organizational Behavior*, 38, 169–185. <https://doi.org/10.1016/j.riob.2018.11.002>
- Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, 12, 204–221. <https://doi.org/10.1037/1076-8998.12.3.204>
- Sonnentag, S., & Fritz, C. (2015). Recovery from job stress: The stressor-detachment model as an integrative framework. *Journal of Organizational Behavior*, 36(S1), S72–S103. <https://doi.org/10.1002/job.1924>

- Sonnentag, S., Kuttler, I., & Fritz, C. (2010). Job stressors, emotional exhaustion, and need for recovery: A multi-source study on the benefits of psychological detachment. *Journal of Vocational Behavior*, 76(3), 355–365. <https://doi.org/10.1016/j.jvb.2009.06.005>
- Sonnentag, S., & Schiffner, C. (2019). Psychological detachment from work during non-work time and employee well-being: The role of leader's detachment. *The Spanish journal of psychology*, 22. <https://doi.org/10.1017/sjp.2019.2>
- Vaziri, H., Casper, W. J., Wayne, J. H., & Matthews, R. A. (2020). Changes to the Work-Family Interface During the COVID-19 Pandemic: Examining Predictors and Implications Using Latent Transition Analysis. *Journal of Applied Psychology*, 105(10), 1073–1087. <https://doi.org/10.1037/apl0000819>
- Wendsche, J., & Lohmann-Haislah, A. (2017). A Meta-Analysis on Antecedents and Outcomes of Detachment from Work. *Frontiers in psychology*, 7, 2072. <https://doi.org/10.3389/fpsyg.2016.02072>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.