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ORIGINAL ARTICLE

Do Older Teachers Benefit More From Workday Break Recovery Than Younger Ones?

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Age has not received much attention in research on work stress recovery. The present study addressed this research gap by studying whether age moderates the relationship between recovery experiences (detachment from work and relaxation) during workday breaks and recovery outcomes (need for recovery and job burnout) among teachers. Both lunch breaks and breaks between classes offer teachers recovery opportunities during workdays. The cross-sectional data were collected via an electronic questionnaire among Finnish class and subject teachers (N = 769) working in publicly funded comprehensive schools (83% female, mean age 49.8 years). Moderated hierarchical regression analyses showed that older subject teachers benefitted more from break detachment and relaxation than their younger colleagues in terms of lower levels of exhaustion and sense of inadequacy at work. In addition, break detachment was more strongly related to a lower need for recovery among older subject teachers. These moderator effects were not found among class teachers who had fewer opportunities to detach and relax during workday breaks than subject teachers. In conclusion, age seems to play a minor role in internal recovery occurring during workdays among teachers.

Keywords: burnout; detachment; need for recovery; relaxation; teachers; workday breaks

Recovery from work stress is essential to stay healthy (Geurts and Sonnentag, 2006; Sonnentag, Ventz, and Casper, 2017). However, in today's working life there are several factors threatening successful recovery. Lack of time for resting is among the most important threats (Meijman and Mulder, 1998; Zijlstra and Sonnentag, 2006). Due to blurring boundaries between work and private life, work is extending its effects on private life, decreasing quantity and impairing quality of leisure (Allvin, Aronsson, Hagström, Johansson, and Lundberg, 2011). In addition, working life is often hectic and demanding (see Eurofound, 2019, for an overview), with less time for breaks during work. Leisure time after work and workday breaks constitute the most important settings for recovery from work (Sonnentag et al., 2017).

Although recovery from work stress has recently received a lot of research attention (see Sonnentag et al., 2017, for a review), there are still gaps in research. The present study addresses some of these. First, it focuses on internal recovery occurring during breaks at work, which has received much less attention than external recovery occurring during leisure time after work. Second, we pay attention to the role of aging in recovery, which has been an under-examined issue, although the challenges of an aging working population have been widely recognized (e.g., Ilmarinen, 2001; Truxillo, Cadiz, and Hammer, 2015). Third, the target group in our study are teachers, whose recovery from work stress has seldom been examined. One exception is the interview study by Skaalvik and Skaalvik (2015), in which middle-aged teachers reported problems in recovering during weekends and vacations. Another longitudinal study showed that teachers had difficulties with unwinding during weekends in the fall term but not during the spring term, which, in contrast to the fall term, included longer breaks from work (Kinnunen, 1989).

Teaching is a highly stressful occupation (e.g., Klassen, 2010; Skaalvik and Skaalvik, 2017; Tang, Leka, and MacLennan, 2013) and it is especially important to recover from work when job stressors are high (Sonnentag, 2018). Job stressors reported by the teachers themselves seem to include the following: 1) poor quality of interaction (e.g., conflicts, misbehavior, lack of support) with pupils, colleagues, and school administration; 2) high time demands and large amount of work; 3) inadequacies in the working conditions and prerequisites of work (e.g., problems with indoor air, lack of materials and equipment); and 4) problems related to social status, professional pride, and salary (e.g., Fernet et al., 2012; Hakanen, Bakker, and Schaufeli, 2006; Klassen and Chiu, 2011). International comparisons (OECD, 2019) show, for example, that Finnish teachers are highly educated, as teachers typically have a master's degree either in education or some other

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subject (e.g., mathematics or languages), with compulsory additional studies in education. Finland, in addition to Iceland and Sweden, is among the countries that between 2013 and 2018 achieved the greatest increase in the share of teachers using digital technologies to support student learning.

Teachers' work offers a fruitful starting point to examine internal recovery as teachers have—besides lunch breaks—structured breaks between classes, which, at least in principle, should provide them with opportunities to recover. Successful recovery during the working day may be an important means to prevent early retirement and to prolong the working career. Our study results can be utilized in finding new ways to improve teachers' opportunities to recover from work stress.

Recovery from work stress during breaks

Recovery is a process during which depleted resources (e.g., energy, mood) are replenished after expending effort and energy at work (Zijlstra and Sonnentag, 2006). In replenishing depleted resources, recovery experiences and activities during off-job time play a key role (Sonnentag, 2001; Sonnentag and Fritz, 2007; Sonnentag and Geurts, 2009). According to Sonnentag and Fritz (2007) recovery experiences are especially important, as it is not the activity (e.g., physical activity) *per se* but its underlying experiences, such as relaxation or psychological detachment from work, that help to recover from work stress. Several recovery experiences have been identified (e.g., Sonnentag and Fritz, 2007; Newman, Tay, and Diener, 2014), of which we focused on psychological detachment and relaxation. Based on the review by Sonnentag and colleagues (2017), these two seem to be the most beneficial recovery experiences in terms of well-being. This is confirmed by the meta-analysis by Bennett, Bakker and Field (2018), which showed that detachment and relaxation during off-job time were especially closely related to lower fatigue. In addition, during the relatively short timeframes of school breaks, achieving detachment and relaxation is more feasible than, for example, having such recovery experiences as mastery and control.

Psychological detachment refers to the subjective experience of leaving work behind, to 'switching off,' and to forgetting about work during non-work time, while *relaxation* refers to the experience of low sympathetic activation and positive affect (Sonnentag and Fritz, 2007). Both experiences have their roots in the effort-recovery (E-R) model (Meijman and Mulder, 1998). According to the E-R model, effort at work leads to acute load reactions (e.g., excretion of stress hormones, feelings of fatigue), and when an individual is no longer exposed to depleting work demands, load reactions are released and recovery occurs. Because psychological detachment and relaxation imply that no further demands are made on the functional systems (e.g., neuroendocrine and cardiovascular systems) and internal resources (e.g., self-regulation) called upon during work, they may be helpful. Current evidence based on recent meta-analyses (Bennett et al., 2018; Wendsche and Lohmann-Haislah, 2017) supports their beneficial effects during off-job time.

Workday breaks constitute an important recovery setting as breaks can prevent resource depletion early on and protect against major need for recovery at the end of a working day. Lunch breaks constitute the longest respite episode during the working day. Maybe therefore lunch breaks have so far received more research attention than other breaks. Earlier cross-sectional and diary studies (e.g., Coffeng et al., 2015; Sianoja et al., 2016; von Dreden and Binnewies, 2017) have shown that detachment from work during lunch breaks is associated with better recovery outcomes (i.e., more vigor, less need for recovery and fatigue). Also, relaxation during lunch breaks has contributed to improved well-being (i.e., more vigor, less strain and fatigue) in diary and intervention studies (e.g., Bosch, Sonnentag, and Pinck, 2018; de Bloom et al., 2017; Krajewski, Sauerland, and Wieland, 2011; Sianoja et al., 2018). Thus detachment from work and relaxation also have beneficial effects during work breaks and not only during off-job time.

Moreover, shorter breaks during the working day may have beneficial effects (see Sonnentag et al., 2017). Teachers in Finnish schools have both lunch breaks, lasting about 30 minutes, and breaks between classes, lasting about 10 minutes. Both break episodes can be categorized as offering opportunities for mesorecovery to occur after 10 minutes to 1 hour (Sluiter, Frings-Dresen, and Meijman, 2000). There is evidence showing that even so-called microbreaks (lasting under 10 minutes) may be beneficial particularly during the afternoon at work (Kühnel et al., 2017). However, it remains so far unknown which recovery experiences are then most beneficial during short breaks.

The participants in the present study worked as teachers in comprehensive schools teaching pupils in classes 1–9, that is, from age 7 to 16. Class teachers take care of classes 1–6 and subject teachers mainly of classes 7–9. As class teachers usually have their lunch with their pupils, their recovery opportunities during lunch breaks are limited. In addition, both teacher groups are required to oversee pupils during breaks between classes on a regular basis, implying that these breaks, too, cannot be fully utilized for recovery purposes. Therefore breaks during the school day do not always fulfill the definition of a break: A break is an episode of the working day during which employees shift their attention away from work tasks (Hunter and Wu, 2016).

The role of aging in recovery from work stress

The role of age has not received much attention in recovery research apart from its role as a control variable or a predictor of need for recovery (Kiss, De Meester, and Braeckman, 2008; Mohren, Jansen, and Kant, 2010). According to Sonnentag and colleagues (2017), because recovery processes are closely linked to mood regulation (Parkinson and Totterdell, 1999; Sonnentag and Fritz, 2007) and because motivation and competence for mood regulation change with age (see Scheibe and Zacher, 2013, for a review), it is reasonable to assume that the effectiveness of specific recovery activities or experiences will change with age.

Stressful work often leads to high negative activation, reflected in negative affective states such as irritability, anger and tension (Sonnentag, 2018). Mood repair is therefore one of the core functions of recovery (Sonnentag and Fritz, 2007). Parkinson and Totterdell (1999) have suggested that regulation strategies can be divided into diversionary and engagement strategies. Diversionary strategies aim at avoiding a negative or stressful situation and seeking distraction from it. Engagement strategies are characterized by confronting or accepting the negative stressful situation. According to Sonnentag and Fritz (2007), diversionary strategies are more relevant for stress recovery because engagement strategies keep the individual cognitively preoccupied with the stressful situation and its potential effects, which makes recovery less likely (Meijman and Mulder, 1998). Psychological detachment from work and relaxation can be seen as diversionary strategies helping to avoid negative work-related cognitions (Parkinson and Totterdell, 1999). Based on another division (Gross, 1998a, b), psychological detachment and relaxation may be categorized into antecedent-focused strategies, which take effect before the negative emotion is actually generated. They both represent attentional deployment in which one distracts attention away from the stressful situation. However, relaxation may also belong to response-focused strategies, for example, in the case when relaxation techniques (e.g., deep breathing) are used for response modulation.

There is evidence indicating that older adults use antecedent-focused emotion regulation strategies more often than do younger adults (see Scheibe and Zacher, 2013, for a review). These strategies are generally more effective and less cognitively demanding than response-focused strategies used for response modulation because in the latter case the full emotional response has developed (Gross, 1998a, b). A meta-analysis comparing the effectiveness of emotion regulation strategies confirmed that distraction—as one type of attentional deployment—was an effective way to regulate emotions (Webb, Miles, and Sheeran, 2012). It is also known that older adults shift to using secondary control strategies that change the self (e.g., motives and goals) in order to adjust to environmental demands instead of using primary control strategies that change external circumstances (Freund and Baltes, 2000; Hechausen, Wrosch, and Schulz, 2010). Secondary strategies are less cognitively demanding than primary control strategies (Scheibe and Zacher, 2013). Detachment and relaxation are more akin to secondary than primary strategies.

Implementation of any mood or emotion regulation strategy requires self-control to some extent (Scheibe and Zacher, 2013). However, the amount of control needed may decrease if people successfully use these strategies over time as then the strategies should become activated more automatically and they are therefore less effortful (Senescac and Scheibe, 2014). Altogether, this means that people's emotion regulation competence may increase with age, implying that fewer resources are needed to reach the same regulatory outcome. Adapting the knowledge of the links between age, mood and emotion regulation to recovery from work stress suggests that older employees may utilize detachment from work and relaxation—representing attentional deployment—more often than younger employees. Older employees may also benefit from these recovery experiences more than younger ones in terms of well-being as the use of these strategies should require less effort (i.e., less self-control is needed) due to the accumulated expertise of older employees.

However, it is worth noting that chronological age derives its meaning from the association with normative changes in different domains of functioning (Scheibe and Zacher, 2013). Even though normative changes (e.g., physiological slowing, motivational shifts, life context changes) occur, there are large inter-individual differences in age-associated change. This is especially true for the lifespan covering working age (Scheibe and Zacher, 2013). Consistent with this notion, several meta-analyses in the work context have found either no age differences or only minimal differences in favor of older employees with regard to work-related stress, motivation and job attitudes (Kooij et al., 2011; Moghimi et al., 2017; Ng and Feldman, 2010; Rauschenbach et al., 2013). This is in line with the idea that different age-related losses and gains may compensate each other. Chronological age also relates to organizational age, i.e., aging in an employee role in an organization (De Lange et al., 2006). Thus it is closely related to tenure and work experience.

The present study: Hypotheses tested

The main aim of the present study was to examine whether age plays a role in the relationship between recovery experiences (detachment, relaxation) during workday breaks (i.e., lunch breaks and breaks between classes) and recovery outcomes (need for recovery, job burnout) among Finnish teachers. We examined need for recovery and job burnout as the outcomes as they are theoretically the most likely consequences of poor recovery (Meijman and Mulder, 1998). Need for recovery refers to the desire to be temporarily relieved of work demands in order to replenish internal resources (Sluiter, van den Beek, and Frings-Dresen, 1999; Van Veldhoven and Broersen, 2003). Need for recovery increases towards the end of the working day and is considered an early sign of poor recovery (Van Veldhoven and Broersen, 2003). Symptoms of burnout (exhaustion, cynicism, sense of inadequacy) may follow in the long-term if poor recovery persists (Maslach, Schaufeli, and Leiter, 2001).

We posed three hypotheses. The first (H1) is based on the E-R model (Meijman and Mulder, 1998) and research on work breaks showing that both break detachment and relaxation have beneficial effects on well-being (e.g., Bosch et al., 2018; Sianoja et al., 2016; 2018).

> *H1*: Experiencing a) detachment from work and b) relaxation during workday breaks has a negative association with need for recovery and job burnout.

The second hypothesis (H2) is in line with the results of meta-analyses on age differences in the work context, which report either no age differences or only minimal differences in favor of older employees (e.g., Ng and Feldman, 2010).

One reason for these favorable results may lie in a healthy worker effect: only the healthiest employees continue to work. Earlier studies on need for recovery suggest that need for recovery is greatest among 46- to 55-year-old employees, but decreases among older employees (Mohren et al., 2010). Older employees generally report lower levels of job burnout (Ng and Feldman, 2010).

> *H2*: Age has a (weak) negative association with need for recovery and job burnout.

The third hypothesis (H3) is set on the basis of changes perceived in emotion and mood regulation across age (see Scheibe and Zacher, 2013, for a review). Consistent with the literature, we expect that detachment and relaxation may be more easily (i.e., with less effort) achieved during work breaks among older teachers due to their greater competence and experience, which in turn is reflected in higher levels of well-being.

> *H3*: Age moderates the negative association between break detachment from work and relaxation with need for recovery and job burnout in such a way that the association is stronger among older teachers than among their younger colleagues.

Methods

Participants and procedure

The participants of this study (N = 769) were teachers working in Finnish publicly funded comprehensive schools, which provide nine-year compulsory basic education. The sample was drawn in the spring of 2017 from the register of the Trade Union of Education (OAJ) stratified by age (under 45-year-olds, 45- to 55-year-olds and over 55-year-olds), and teacher group (class teacher and subject teacher). Age 45 was used as a threshold for defining aging teachers, as around that age perceived work ability starts to decline (Ilmarinen, 2001; Kooij et al., 2011). An 'early' definition also affords better opportunities for preventive measures (Ilmarinen, 2001). Age 55 or over has been emphasized as an age after which early action is needed to prevent employees from leaving working life (Ilmarinen, 2001).

Of Finnish teachers, 95% belong to the Trade Union of Education. The electronic questionnaire was sent by the trade union to 3,500 teachers, who were randomly selected representing all parts of the Finnish-speaking areas of the country. Among class and subject teachers the questionnaire was sent to 500 teachers' e-mail addresses in each age group. The response rate was 28% among class teachers and 21% among subject teachers. The attrition analyses showed that the study participants were older (the share of over 55-year-old teachers 41.5% vs. 18.6%), more often women (83.4% vs. 77.6%) and subject teachers (47.1% vs. 35.6%) than teachers registered as members of the Trade Union of Education. The age difference is explained by the procedure by which the sample was drawn, i.e., as aging teachers were the target group of the study, the older age groups were given more weight than under 45-year-olds.

Of the study participants, 58% worked as class teachers and 42% as subject teachers in comprehensive schools. Of the teachers, 83% were women and 17% were men and they belonged to the three age categories as follows: 25% were under 45 years old, 39% 45 to 55 years old and 36% were over 55 years old. Their self-reported average working hours were 36.5 (SD = 9.3) covering teaching (lessons and their preparation) and administrative tasks. Class and subject teachers did not differ in working hours [M = 36.4 (SD = 9.0) vs. M = 36.8 (SD = 9.7), $t(767) = -0.639$, ns].

The participants were informed about the study goals and assured that their responses would be treated in confidence and that participation was voluntary. Informed consent was included on the first page of the questionnaire.

Measures

Break recovery experiences

Detachment from work and *relaxation* occurring during lunch breaks and breaks between classes were measured separately. On both break occasions a single-item measure ('I distance myself mentally from my work during lunch breaks/breaks between classes'; 'I use the time to relax during lunch breaks/breaks between classes') was used. The items were from the Recovery Experience Questionnaire (Sonnentag and Fritz, 2007), which has been validated in Finland (Kinnunen, Feldt, Siltaloppi, and Sonnentag, 2011) and modified to apply to breaks. The rating scale ranged from 1 (seldom) to 5 (very often). We computed a sum score for break detachment and relaxation covering both lunchbreaks and breaks between classes, for which the respective Cronbach's alphas were 0.68 and 0.64.

Recovery outcomes

Need for recovery was measured on the shortened scale constructed by van Veldhoven, Prins, Van der Laken and Dijkstra (2015) based on the longer version of the scale (van Veldhoven and Broersen, 2003). The shortened scale consists of six items (e.g., 'When I get home from work, I need to be left in peace for a while'), which were rated on a scale from 1 (totally disagree) to 5 (totally agree). The Cronbach's alpha of the scale was 0.86. *Job burnout* was assessed by the Bergen Burnout Indicator-9 (Salmela-Aro, Rantanen, Hyvönen, Tilleman, and Feldt, 2011; Feldt et al., 2014), which measures exhaustion (e.g., 'I am snowed under with work'), cynicism (e.g., 'I feel that I'm gradually losing interest in my pupils') and sense of inadequacy (e.g., 'I feel that I have gradually less to give') each with three items. The rating scale ranged from 1 (totally disagree) to 6 (totally agree). The Cronbach's alphas were as follows: 0.71, 0.81 and 0.81. It has been shown (Näätänen, Aro, Matthiesen, and Salmela-Aro, 2003) that the subscales of exhaustion and cynicism correspond well with the corresponding subscales of the Maslach Burnout Inventory—General Survey (Maslach, Jackson, and Leiter, 1996). However, the correspondence is less clear between sense of inadequacy and lack of professional efficacy. The reason for this may lie in the wording of the sense

of inadequacy items; they are negative contrary to the positive items of (lack of) professional efficacy (Näätänen et al., 2003).

Moderator

Chronological *age* was measured as a continuous variable eliciting the year of birth. Age was calculated by performing a transformation (2017—year of birth) (M = 49.8 years, SD = 10.2 years, range 20–65).

Controls

In the analyses we controlled for *workload,* as job demands may set in motion a process of deteriorating health leading to poor well-being and health (Bakker, Demerouti, and Sanz-Vergel, 2014). Workload has been shown to be the main antecedent of burnout, especially of exhaustion (Alarcon, 2011; Lee and Ashforth, 1996). In addition, workload is a crucial factor that makes psychological detachment from work and relaxation more difficult (Bennett et al., 2018; Wendsche and Lohmann-Haislah, 2017). Workload was measured with three items (e.g., 'How often does your job require you to work under time pressure?') from the Quantitative Workload Inventory (Spector and Jex, 1998). The items were rated on a five-point scale from 1 (very seldom or never) to 5 (very often or always). The Cronbach's alpha of the scale was 0.86.

Results

Descriptive results

For descriptive purposes we examined teacher and age group differences in the study variables, which are shown in **Table 1**. The results of the two-way analyses of variance revealed that teacher group differences were more pronounced than were age group differences. Class teachers had less break detachment and relaxation experiences and higher exhaustion level than subject teachers ($p < 0.001$). Due to these essential differences between the teacher groups in recovery opportunities, we continued by examining the two teacher groups separately. There were also age differences in break detachment ($p < 0.01$), in relaxation ($p < 0.05$) and in inadequacy ($p < 0.001$). The oldest group of teachers (over 55 years old) reported higher break detachment and relaxation than teachers aged 45–55 years. The youngest group (under 45 years old) had fewer feelings of inadequacy than the older age groups.

Table 2 shows the correlations of the study variables separately for class teachers and subject teachers. In both teacher groups, break detachment and relaxation related to less need for recovery and fewer burnout symptoms. Age correlated with higher sense of inadequacy in both teacher groups and with higher break detachment among subject teachers. Break detachment and relaxation were strongly linked with each other in both teacher groups. Also, recovery outcomes correlated strongly with each other, especially the two burnout symptoms of cynicism and sense of inadequacy. Workload was negatively associated with break recovery experiences and positively with recovery outcomes.

Hypotheses testing

We tested the hypotheses (H1–H3) with moderated regression analysis (Aiken and West, 1991) separately among class teachers and subject teachers. To avoid multicollinearity, we calculated separate models for break detachment and relaxation (correlations ranged r = 0.66—0.68, $p < 0.001$). We performed hierarchical multiple regression analyses for each dependent variable using the following procedure: workload was entered at step 1 to control for its effect; break detachment and relaxation were entered at step 2 and age at step 3. At step 4 we entered the interaction terms (age × break detachment, age × break relaxation). All variables were standardized to avoid multicollinearity.

Results for break detachment

The results for the relationships between break detachment and recovery outcomes are shown in **Table 3** separately for class teachers and subject teachers. At step 1, workload as a control variable explained 6–29% of the variance in various outcomes. The explanation rate was highest for exhaustion and lowest for cynicism in both teacher groups. At step 2 break detachment contributed to all outcomes except for inadequacy among class teachers, explaining 1–8% of the variance in the outcomes. Again, the highest variance explained concerned exhaustion in both teacher groups. At step 3 age did not play a major role as it was positively related only to inadequacy in both teacher groups.

All significant moderator effects at step 4 were found in subject teachers: age moderated the relationship between break detachment and need for recovery, exhaustion and inadequacy. These moderator effects are shown graphically in **Figure 1 (a–c)**. The graphical presentations of the interactions were derived using standardized regression coefficients of the regression lines for teachers high (1 *SD* above the mean age, that is, over 60 years) and low (1 *SD* below the mean age, that is, under 40 years) on the moderator variable of age. We also performed simple slope analyses to test the significance of the relationships in younger and older age groups.

As **Figure 1 (a–c)** shows, under conditions of high break detachment older subject teachers reported less (or equally great) need for recovery, exhaustion and inadequacy at work than younger teachers. However, under conditions of low break detachment, older subject teachers' well-being was poorer than that of their younger counterparts. Thus the results suggest that older subject teachers benefitted more from high workday break detachment than did their younger counterparts. Simple slope analyses provided support for this interpretation: the negative relationship between detachment and need for recovery was significant in both younger (B = –0.23, $p < 0.01$) and older teachers (B = –0.45, $p < 0.001$) but the relationship was stronger among older teachers. This seemed also to be the case concerning the relationship between detachment and exhaustion although the difference in strength was not confirmed by the level of statistical significance: B = –0.28, $p < 0.001$ in younger and B = –0.52, $p < 0.001$ in older

Table 1: Age and teacher group differences (*M* and *SD*) in study variables: Results of 2-way analyses of variance.

Variable	Under 45-year-olds (1)		45–55-year-olds (2)		Over 55-year-olds (3)		Age effect	Teacher group effect	Age × teacher group
	Class teachers (*n* = 95)	Subject teachers (*n* = 94)	Class teachers (*n* = 185)	Subject teachers (*n* = 114)	Class teachers (*n* = 168)	Subject teachers (*n* = 113)	*F*	*F*	*F*
Workload	4.10 0.74	3.93 0.86	4.06 0.70	3.94 0.79	3.91 0.73	3.86 0.69	2.24, ns	4.10*	0.36, ns
Break detachment	1.54 0.67	1.75 0.72	1.54 0.76	1.77 0.85	1.60 0.74	2.09 0.93	5.35** 2 < 3	28.77***	2.57, ns
Break relaxation	1.76 0.72	2.15 0.86	1.73 0.80	2.10 0.88	1.86 0.86	2.39 0.89	5.01** 2 < 3	46.33***	0.78, ns
Need for recovery	3.40 0.95	3.26 1.04	3.42 0.87	3.27 1.01	3.34 0.97	3.20 1.03	0.46, ns	3.65, ns	.01, ns
Exhaustion	3.68 1.26	3.33 1.14	3.68 1.12	3.44 1.16	3.60 1.18	3.34 1.22	0.42, ns	10.51***	0.12, ns
Cynicism	2.49 1.09	2.52 1.14	2.65 1.22	2.66 1.26	2.64 1.23	2.64 1.16	0.99, ns	0.18, ns	.01, ns
Inadequacy	2.86 1.15	2.83 1.19	3.66 1.37	3.23 1.33	3.55 1.40	3.21 1.29	10.23*** 1 > 2–3	3.10, ns	0.88, ns

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ns = non-significant; pairwise mean comparisons with Bonferroni correction ($p < 0.05$).

Table 2: Correlations of study variables among subject teachers ($n = 321$, above the diagonal) and class teachers ($n = 448$, under the diagonal).

Variable	Class teachers *M (SD)*	Subject teachers *M (SD)*	1	2	3	4	5	6	7	8
1 Workload	4.01 (0.72)	3.91 (0.77)	–	–0.05	–0.24***	–0.35***	0.43***	0.54***	0.30***	0.31***
2 Age	50.82 (9.28)	48.73 (11.20)	–0.09	–	0.13*	0.09	–0.01	0.01	0.06	0.12*
3 Break detachment	1.56 (0.73)	1.88 (0.86)	–0.34***	0.03	–	0.68***	–0.32***	–0.39***	–0.23***	–0.23***
4 Break relaxation	1.79 (0.81)	2.22 (0.89)	–0.27***	0.02	0.66***	–	–0.39***	–0.42***	–0.25***	–0.27***
5 Need for recovery	3.39 (0.93)	3.25 (1.02)	0.41***	–0.03	–0.30***	–0.28***	–	0.66***	0.52***	0.55***
6 Exhaustion	3.65 (1.17)	3.37 (1.17)	0.52***	–0.04	–0.33***	–0.31***	0.67***	–	0.57***	0.57***
7 Cynicism	2.61 (1.20)	2.61 (1.19)	0.24***	0.02	–0.18***	–0.17**	0.48***	0.59***	–	0.79***
8 Sense of inadequacy	3.27 (1.36)	3.10 (1.28)	0.26***	0.16**	–0.16**	–0.16**	0.46***	0.54***	0.81***	–

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 3: Results of hierarchical regression analyses for recovery outcomes; break detachment as a recovery experience.

	Class teachers (n = 448)				Subject teachers (n = 321)			
	Need for recovery β	**Exhaustion β**	**Cynicism β**	**Inadequacy β**	**Need for recovery β**	**Exhaustion β**	**Cynicism β**	**Inadequacy β**
Step 1. Workload	0.35***	0.46***	0.21***	0.25***	0.37***	0.47***	0.26***	0.27***
ΔR^2	0.17***	0.27***	0.06***	0.07***	0.18***	0.29***	0.09***	0.10***
R^2	0.17***	0.27***	0.06***	0.07***	0.18***	0.29***	0.09***	0.10***
Step 2. Break detachment	–0.18***	–0.18***	–0.11*	–0.08	–0.24***	–0.29***	–0.18**	–0.18***
ΔR^2	0.03	0.03***	0.01*	0.01	0.05***	0.08***	0.03**	0.03**
R^2	0.20***	0.29***	0.07***	0.07***	0.23***	0.36***	0.12***	0.12***
Step 3. Age	0.01	0.00	0.04	0.18***	0.05	0.07	0.10	0.16**
ΔR^2	0.00	0.00	0.00	0.04***	0.00	0.00	0.01	0.02**
R^2	0.20***	0.29***	0.07***	0.11***	0.23***	0.36***	0.13***	0.15***
Step 4. Age × break detachment	–0.02	0.03	0.05	0.04	–0.10*	–0.11*	–0.06	–0.13*
ΔR^2	0.00	0.00	0.00	0.00	0.01*	0.01*	0.00	0.02**
R^2	0.20***	0.30***	0.07***	0.11***	0.24***	0.38***	0.13***	0.16***

Note: β = standardized beta-coefficient from the final step, ΔR^2 = change in explanation rate in each step, R^2 = explanation rate.
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

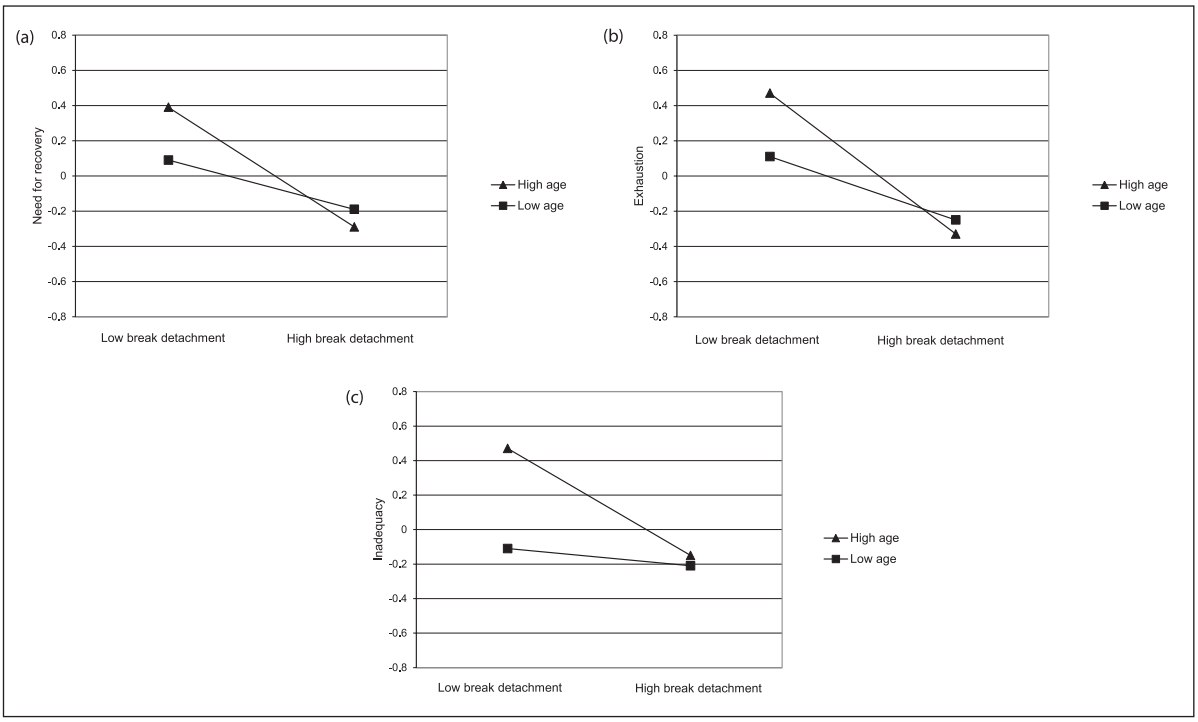

Figure 1: Significant interaction effects between break detachment and need for recovery **(a)**, exhaustion **(b)**, and sense of inadequacy **(c)** among subject teachers.

teachers. The negative relationship between detachment and feelings of inadequacy was only significant among older teachers (B = –0.48, $p < 0.001$ vs. B = –0.15, ns). The full models explained between 7% (cynicism in class teachers) and 38% (exhaustion in subject teachers) of the variance in various outcomes.

Results for break relaxation

The results for the relationships between break relaxation and recovery outcomes shown in **Table 4** separately for class teachers and subject teachers are quite similar to the results for break detachment. Break relaxation contributed to all recovery outcomes, explaining 1–6% of the variance in the outcomes. Age did not play a role except for feelings of inadequacy. Again, the moderator effects were only found among subject teachers and they were similar to those for detachment (graphical presentations therefore not shown). Simple slope analyses confirmed that the negative relationship between break relaxation and feelings of inadequacy (B = –0.40, $p <$ 0.001 in older vs. B = –0.17, $p < 0.01$ in younger teachers) was stronger among older than among younger teachers. The relationship between break relaxation and exhaustion (B = –0.53, $p < 0.001$ in older vs. B = –0.32, $p < 0.001$ in younger teachers) pointed in the same direction, although it was statistically equally significant in both teacher groups. Thus, both younger and older subject teachers benefitted from high break relaxation, but the benefit was greater for older teachers. The total variance explained by the model ranged from 7% to 36%.

Discussion

The main aim of the present study was to shed new light on the role of age in the relationships between recovery experiences (detachment from work and relaxation) at work breaks and recovery outcomes (need for recovery and job burnout). Besides these possible moderator effects, we examined the direct relationships between recovery experiences and age with need for recovery and job burnout. The target group of our study was teachers, who are known to have highly stressful jobs and therefore recovery experiences should be particularly helpful for them (Sonnentag, 2018).

Main findings and their theoretical implications

Experiencing detachment from work and relaxation during workday breaks was negatively associated with need for recovery and burnout, as expected on the basis of the E-R model (Meijman and Mulder, 1998). H1 thus received support. Our study demonstrates, in line with earlier studies concerning lunchbreaks (e.g., Bosch et al., 2018; Sianoja et al., 2016, 2018; von Dreden and Binnewies, 2017), that these recovery experiences are also significant during work breaks and not only during off-job time. The associations as regards greater for need for recovery and exhaustion appear stronger than for cynicism and sense of inadequacy. This may relate to the fact that need for recovery and exhaustion are symptoms occurring at an early phase of the burnout process and may therefore be easier to influence than cynicism and inadequacy (Maricuţoiu, Sava, and Butta, 2016; Maslach et al., 2001).

It is noteworthy that detachment and relaxation were experienced quite seldom during work breaks and their explanation rates remained low (0–8%). Moreover, teacher group had a more marked effect on both recovery experiences than did age. Both recovery experiences were more common among subject teachers than class

Table 4: Results of hierarchical regression analyses for recovery outcomes; break relaxation as a recovery experience.

	Class teachers (n = 448)				Subject teachers (n = 321)			
	Need for recovery β	**Exhaustion β**	**Cynicism β**	**Inadequacy β**	**Need for recovery β**	**Exhaustion β**	**Cynicism β**	**Inadequacy β**
Step 1. Workload	0.36***	0.47***	0.21***	0.24***	0.33***	0.44***	0.24***	0.25***
ΔR^2	0.17***	0.27***	0.06***	0.07***	0.18***	0.29***	0.09***	0.10***
R^2	0.17***	0.27***	0.06***	0.07***	0.18***	0.29***	0.09***	0.10***
Step 2. Break relaxation	–0.17***	–0.18***	–0.11*	–0.10*	–0.28***	–0.28***	–0.18**	–0.21***
ΔR^2	0.03***	0.03***	0.01*	0.01*	0.06***	0.06**	0.02**	0.03**
R^2	0.20***	0.30***	0.07***	0.07***	0.25***	0.35***	0.12***	0.13***
Step 3. Age	–0.00	0.00	0.05	0.19***	0.04	0.08	0.12*	0.19**
ΔR^2	0.00	0.00	0.00	0.03***	0.00	0.00	0.01	0.02**
R^2	0.20***	0.30***	0.07***	0.11***	0.25***	0.35***	0.12***	0.15***
Step 4. Age × break relaxation	–0.08	–0.00	0.06	0.02	–0.03	–0.11*	–0.09	–0.14*
ΔR^2	0.01	0.00	0.00	0.00	0.00	0.01*	0.01	0.02*
R^2	0.21***	0.30***	0.07***	0.11***	0.25***	0.36***	0.13***	0.17***

Note: β = standardized beta-coefficient from the final step, ΔR^2 = change in explanation rate in each step, R^2 = explanation rate.
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

teachers and an increase in their occurrence was observed especially among subject teachers belonging to the oldest (over 55-year-old) age group. These findings suggest that experiencing detachment from work and relaxation during work breaks depends more on recovery opportunities offered by working conditions than age, although age has a minor role. The observed role of age is in line with the theoretical considerations on age differences in emotion regulation: the use of strategies representing attentional deployment—such as detachment and relaxation—in which one distracts attention from the stressful situation increases with advancing age (Scheibe and Zacher, 2013). This likely relates to older adults' emotion-regulation competence, which helps them to select appropriate (often less cognitively demanding) strategies (Heckhausen et al., 2010). Such avoidance strategies are helpful in recovery as they make it possible to avoid work-related cognitions maintaining negative activation (Sonnentag and Fritz, 2015).

Of burnout symptoms, age played a role in relation to sense of inadequacy. Older teachers had more sense of inadequacy at work. This concerned both class teachers and subject teachers. Therefore H2, which expected fewer symptoms with age, did not gain support. In the meta-analysis by Ng and Feldman (2010) older employees experienced fewer burnout symptoms, which may relate to the selection bias known as the healthy worker effect. However, there are also some studies showing that burnout increases somewhat with age. For example, Ahola and co-workers (2006) showed that as a three-dimensional syndrome, burnout was positively related to age in a population-based Finnish sample. In our study the age effect was seen only in relation to sense of inadequacy. This may relate to the growing demands for lifelong learning with the rapid digitalization of Finnish society, including teaching work. It challenges the existing teaching methods and practices and requires teachers to work more effectively and flexibly. This demand may become a burden for older teachers, whose digital skills are very likely poorer than those of their younger colleagues, causing them to feel inadequate at their work. It is also possible that a general distrust in older employees' competence and motivation to learn may be behind the result (Ng and Feldman, 2012): older teachers may have internalized this stereotype over the years and therefore feel inadequate.

Age moderated the relationships between break detachment and relaxation and recovery outcomes, but these moderator effects were found only in subject teachers. Thus, older subject teachers benefitted more than their younger counterparts from break detachment and relaxation in terms of well-being. H3 expecting moderator effects gained partial support. The result that moderator effects were only found among subject teachers may relate to the perception that they had more recovery opportunities during work breaks. Consequently, their breaks fulfilled the criterion for a break better, that is, during a break attention is distracted from work tasks (Hunter and Wu, 2016). Class teachers seem to perform work tasks and oversee their pupils during work breaks more often than subject teachers, which reduces their recovery opportunities (Virtanen, Perko, Törnroos, de Bloom, and Kinnunen, 2019). This can be seen in the form of poorer detachment and relaxation during breaks. We may conclude that only when a certain threshold of recovery opportunities is achieved do the moderator effects emerge.

Among subject teachers age played a role in helping to benefit more from both break detachment and relaxation in terms of well-being. Although the beneficial effects of high break detachment on need for recovery, high break detachment and relaxation on exhaustion and high break relaxation on inadequacy were also seen in the younger age group, the effects were more marked among older subject teachers. The positive effect of break detachment on less feeling of inadequacy at work was seen only in the older age group. Thus, not only did work conditions afford better recovery opportunities during breaks for subject teachers, but our results suggest that age also gave these teachers more competence and experience to use detachment and relaxation during work breaks and benefit from these experiences (see Scheibe and Zacher, 2013). It is possible that this tendency of detaching and relaxing during breaks may develop gradually into a habit and become a more usual way of spending breaks (Sonnentag and Fritz, 2015). In our case, greater work experience achieved through increasing age (e.g., less need to prepare for classes) likely helps to make the habit possible. However, working conditions also have to support the experience of break detachment and relaxation.

Limitations and suggestions for future studies

A few noteworthy limitations are obvious in our study. First of all, the study design was cross-sectional, making it impossible to draw conclusions about the direction of causality. Our hypotheses stated that recovery experiences during breaks determine well-being outcomes, but the relationships might equally well be the opposite. It has been argued that employees higher in burnout may have a harder time detaching from work. The reason for this may relate to reduced self-regulatory capacity that would be needed to refrain from thinking about work-related matters when it is not necessary (Sonnentag and Fritz, 2015). This reverse relationship has been shown in longitudinal studies lasting from four weeks (Sonnentag, Arbeus, Mahn, and Fritz, 2014) to two years (Kinnunen, Feldt, and de Bloom, 2019). In the future, either short-term diary studies or long-term longitudinal studies are needed to better reveal causal relationships between break recovery and various recovery outcomes. Such studies would also be relevant from the viewpoint of aging, as individuals age differently. Studying within-individual changes is therefore more useful than age group comparisons (e.g., Truxillo et al., 2015).

Second, our data were based on self-reports, which may inflate the relationships found between the phenomena examined due to common method variance. However, it has been shown that interaction effects, which were the principal focus of our study, are unlikely to be produced

by common method variance (Siemsen, Roth, and Oliveira, 2010). The moderator effects found in our study were small, which is typical of non-experimental field studies (e.g., McClelland and Judd, 1993). Evans (1985) concluded that even those moderator effects explaining 1–2% of the total variance should be considered important. In addition, common method variance should have inflated all the relations and not just some of them. In fact, it has been argued that common method variance does not automatically inflate associations measured with self-report measures (Spector, 2006). However, in the future break detachment and relaxation could be observed by colleagues (e.g., where colleagues spend their breaks, whether they work or speak about work during breaks) in addition to self-evaluations.

Third, we focused on teachers because they have structured breaks at work. Although this was a good starting point, a one-sample design naturally limits the generalizability of our findings; they can be generalized only to teachers. In addition, the response rate was rather low and certain self-selection was apparent as women and subject teachers were overrepresented in the sample compared to teachers in the register of the Trade Union of Education, from which the sample was drawn. Our sample was also older but that is due to the age-stratified way the sample was drawn. Nevertheless, we had enough power to obtain significant results due to a large sample, which also adds to the generalizability of our results. In the future, other occupations, in which breaks may be more spontaneously scheduled, would be worth examining.

Fourth, we used two-item scales to measure break detachment and relaxation in order to keep the length of the questionnaire reasonable because this study was part of a larger project. The reliability (internal consistency) of these two-item measures remained slightly under 0.70, likely due to the fact that of the two items, one concerned lunch breaks and another breaks between classes, that is, they had a different focus. In addition to using more items, the focus could be expanded to cover other recovery experiences (e.g., control, affiliation), in order to better answer the question as to which recovery experiences are most beneficial during work breaks.

All in all, as our results are the first to show the moderating role of age in the relationships between break detachment and relaxation and recovery outcomes, we recommend that future studies examine age effects in other occupations.

Practical implications

Our results showed that class teachers' opportunities to detach from work and relax at work breaks were poorer than those of subject teachers. Therefore, class teachers in particular would need better breaks, that is, better opportunities to shift their attention away from work tasks. Our ongoing larger study among Finnish teachers revealed that class teachers prepare their classes and oversee their pupils more often during work breaks than do subject teachers (Virtanen et al., 2019). Instead of working, class teachers should spend their breaks more often with other teachers in a staffroom, which turned out to be a good way to experience both detachment and relaxation during breaks in our larger study. Consequently, both changes in organizing work tasks and changes in the awareness of the role of recovery in maintaining well-being may be needed. Perhaps it would be possible to leave the classroom and decrease preparations for next classes more often by being more aware of the beneficial effects of recovery, that is, to strive more consciously for recovery experiences during breaks. This is important as these experiences promote well-being, i.e., are conducive to needing less recovery at the end of working day and also having less exhaustion.

Earlier studies have also shown that relaxation exercises or park walks during breaks are helpful in relaxing and detaching and beneficial to afternoon well-being (de Bloom et al., 2017; Krajewski et al., 2010; Sianoja et al., 2018; Verbeek et al., 2018). Advancing age may also help to develop a habitual tendency of detaching and relaxing during breaks if working conditions make room for this development. This tendency probably also develops with the help of conscious attention towards beneficial recovery experiences throughout the working career. In addition, we know that job demands, like high workload and job resources, like control and support, are connected to both recovery experiences and well-being (Bennett et al., 2018; Kinnunen et al., 2011; Sonnentag et al., 2017). Therefore, it is important that teaching work should have a healthy job design, that is, job demands remain at a reasonable level and job resources are high.

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Competing Interests

The authors have no competing interests to declare.

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