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Psychological Detachment: A Moderator in the Relationship of Self-Control Demands and
Job Strain

31 Abstract

32 In the present article, we investigate psychological detachment as a moderator of the positive
33 relationship of self-control demands (SCDs) and indicators of psychological strain. Based on
34 the propositions that a) SCDs are a source of work stress, which draws on and depletes
35 limited regulatory resources, and b) psychological detachment facilitates the recovery of that
36 resource, we expected that psychological detachment attenuates the positive relationships
37 between SCDs and psychological strain (ego depletion, need for recovery, emotional
38 exhaustion and depersonalization). We tested our prediction in two different studies with
39 hierarchical moderated regression analyses. Results of the first study (N= 445) provided
40 strong support for our prediction that psychological detachment buffers the adverse impact of
41 SCDs on strain. In the second study (N=426), we replicated our initial findings and tested the
42 theoretical assertion that psychological detachment is more effective in buffering those
43 stressors that deplete limited regulatory resources (SCDs) in contrast to stressors (job
44 ambiguity), which are considered to cause strain through other mechanisms. Contrastive
45 comparisons of the differential interaction patterns of psychological detachment with
46 stressors that induce self-control efforts and job ambiguity, supported our prediction that
47 psychological detachment is more effective in attenuating the adverse effects of SCDs on
48 psychological strain.

49 *Keywords:* Self-control demands, psychological detachment, burnout, recovery.

75 defined as an “(...) individual’s sense of being away from the work situation” (Etzion, Eden,
76 & Lapidot, 1998, p. 579). Conceptualized as an experienced state in which employees
77 mentally disengage from work during non-work time (Sonnentag & Bayer, 2005), we expect
78 detachment to facilitate recovery of the limited regulatory resource that is depleted through
79 SCDs and thus, to attenuate the adverse impact of work-related SCDs on strain.

80 With the present research, we aim to enhance current literature on self-control in at
81 least two ways: First, we examine psychological detachment as a moderator that is expected
82 to buffer the adverse impact of SCDs on strain. Because from an individual’s perspective
83 psychological detachment is considered to be more malleable than moderators that have been
84 examined so far, our research might offer employees better opportunities to reduce the
85 adverse consequences of SCDs at work. Second, we integrate theories from the field of self-
86 control and recovery research to shed light on the mechanisms that underlie the beneficial
87 effects of psychological detachment. We integrate the Model of Self-Control Strength
88 (Muraven & Baumeister, 2000) and the Effort-Recovery Model (Meijman & Mulder, 1998),
89 which propose that a reduction of effort reverses physical and psychological load reactions
90 and facilitates recovery, and we propose that psychological detachment should restore the
91 limited regulatory resource, which is depleted by work-related SCDs.

92 In two studies we test moderating effects of psychological detachment on the
93 relationship between SCDs and indicators of strain (ego depletion, need for recovery,
94 emotional exhaustion and depersonalization). In line with our argument that psychological
95 detachment restores regulatory resources, it may not be an effective buffer against the adverse
96 impacts of other types of work-related stressors. Thus, we propose that psychological
97 detachment is more effective in buffering the adverse impacts of those stressors that deplete
98 limited regulatory resources (e.g. SCDs) as opposed to stressors which exert their adverse
99 effects through other mechanisms. Consequently, in a second study, we examine the

100 moderating effect of psychological detachment on the positive relationship between job
101 ambiguity and strain. Job ambiguity indicates employees' lack of job-related information
102 (Breugh & Colihan, 1994). Previous research has demonstrated that job ambiguity exerts its
103 adverse effects on strain predominantly through negative appraisal mechanisms (Monat,
104 Averill, James, & Lazarus, 1972). We expect detachment to be less effective in buffering the
105 adverse impact of job ambiguity on strain than the adverse impact of SCDs because it induces
106 enduring stressful states due to negative appraisal even in non-work time that should not be
107 counteracted by detachment.

108 In the following, we first review the literature on self-control. Then, the concept of
109 detachment will be briefly discussed. Afterwards, we integrate both lines of research to
110 elaborate on the mechanism that underlies the buffering effect of psychological detachment.

111 **Self-control demands: A source of stress at work**

112 Results from research on self-control indicate that exerting self-control can lead to
113 impairments in cognitive and behavioral control (Muraven, Tice, & Baumeister, 1998;
114 Schmeichel, Vohs, & Baumeister, 2003). In a series of experimental studies that demanded
115 two successive acts of self-control (e.g. suppressing emotions, attention control), self-control
116 performance on the second act was consistently impaired even in a seemingly unrelated
117 sphere of activity (Hagger, Wood, Stiff, & Chatzisarantis, 2010). Muraven and Baumeister
118 (2000) developed the Model of Self-Control Strength to account for these findings. They
119 labeled the state of short-term reduction in the capacity to engage in self-control as ego
120 depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998). The model further predicts that
121 the inability to recover the regulatory resource due to recurrent requirements to exert self-
122 control may lead to chronic deficits that can manifest in high levels of strain and impaired
123 well-being (Muraven & Baumeister, 2000).

124 Recent research on occupational stress and health has also demonstrated that the
125 demands on self-control constitute a major stressor at work. Schmidt and Neubach (2007)
126 examined different forms of SCDs at work and their cumulative effects on job strain. SCDs
127 are conceptualized to cause employees to engage in self-control and thus, to deplete limited
128 regulatory resources. In particular, SCDs involve a set of the following work-related
129 requirements: To control or inhibit spontaneous responses and associated affective states
130 which manifest for example in injudicious expressions (impulse control); to ignore or resist
131 distractions evoked by task irrelevant stimuli (resisting distractions); and to overcome
132 motivational deficits that result from unattractive tasks (overcoming inner resistances). On
133 the basis of several samples from different occupational contexts, cross-sectional and
134 longitudinal studies revealed that SCDs predict indicators of job strain and impaired well-
135 being (e.g. burnout, depressive symptoms, and absenteeism; Diestel & Schmidt, 2011, 2012).

136 In line with the Model of Self-Control Strength the psychological costs of SCDs are
137 considered to result from repeated depletion of limited regulatory resources (see also Oaten &
138 Cheng, 2005). Consequently, the model predicts that in cases of high SCDs and associated
139 states of ego depletion, recovery of the regulatory resource can be expected to prevent strain.
140 However, we know of no study that has focused on recovery experiences that may restore
141 regulatory resources and thus buffer the adverse effects of SCDs. Drawing on recovery
142 research (Sonnentag & Fritz, 2007), psychological detachment (a state, which enables
143 employees to mentally disengage from work) may be able to restore limited regulatory
144 resources that are taxed by SCDs at work. Thus, in the present study, we examine whether
145 detachment attenuates the positive relationship between SCDs and strain.

146 **Psychological detachment**

147 First evidence for the benefits of psychological detachment were provided by Etzion
148 et al. (1998) who found that participants who signed up for reserve military service and

149 thereby experienced detachment from their jobs reported lower levels of stress and strain
150 when returning to their previous jobs than individuals who did not sign up for reserve
151 military service and thus, did not experience psychological detachment. Consequently,
152 detachment implies that short-term mental absence from work (e.g. in leisure time) may have
153 beneficial effects on strain. Similarly, Sonnentag and Bayer (2005) found that employees who
154 experienced higher levels of detachment from work during leisure time reported an increased
155 positive mood and decreased feelings of fatigue at bedtime.

156 Sonnentag and Fritz (2007) argue that during periods of psychological detachment,
157 employees experience a reduction of job demands and a break from work-related stressors.
158 Thereby, detachment facilitates recovery processes, which enhance psychological well-being
159 (Meijman & Mulder, 1998). In contrast, individuals who are unable to detach from work in
160 leisure time return to work in a less recovered state. In such a state, handling stressors
161 becomes even more effortful and thus, results in increased strain (Binnewies, Sonnentag, &
162 Mojza, 2009).

163 Further research on recovery experiences supported the notion that psychological
164 detachment reduces psychological strain, over time (e.g. emotional exhaustion, need for
165 recovery, and psychosomatic complaints; Sonnentag, Binnewies, & Mojza, 2010; Sonnentag,
166 Kuttler, & Fritz, 2010). Additionally, Sonnentag et al. (2010) provided evidence that
167 detachment moderates (buffers) the adverse effects of job stressors (e.g. job demands) on
168 strain and well-being.

169 **Buffering effects of psychological detachment**

170 Going beyond previous research and connecting the domains of SCDs and recovery
171 research, we argue that psychological detachment may contribute to the recovery of the
172 regulatory resource, which is depleted by high job-related SCDs. Thus, in cases of high
173 SCDs, detachment is expected to prevent SCDs to manifest in indicators of strain. Based on

174 the assumptions that a) SCDs are a source of work stress, which draws on and depletes a
175 limited regulatory resource, and b) detachment contributes to the recovery of that resource,
176 we expect SCDs to interact with detachment in predicting strain. More specifically, the
177 positive relationships between SCDs and indicators of psychological strain are hypothesized
178 to be attenuated (buffered) as function of psychological detachment.

179 Our predictions derive from the Effort-Recovery Model (Meijman & Mulder, 1998)
180 and the Model of Self-Control Strength (Muraven & Baumeister, 2000). The Effort-Recovery
181 Model suggests that effort at work leads to physical and psychological load reactions (e.g.
182 fatigue, physical arousal). These load reactions can be reversed through reduction of work-
183 related effort. On the contrary, if individuals are exposed to prolonged work-related effort,
184 load reactions become irreversible and manifest in strain and impaired psychological well-
185 being. On the basis of this theoretical notion, Sonnentag et al. (2010) argue that through the
186 absence of work-related thoughts psychological detachment in leisure time reduces work-
187 related effort. Thus, we propose that during periods of detachment in leisure time work-
188 related SCDs cease to deplete limited regulatory resources. Thus, psychological detachment
189 interrupts load reactions (depletion) on the limited regulatory resource resulting from work-
190 related SCDs. Thereupon, load reactions are reversed and the limited regulatory resource can
191 be restored. Put differently, our proposition implies that individuals experiencing high levels
192 of detachment in leisure time are less strained by high SCDs at work than individuals that
193 experience low levels of detachment. We argue that this effect results from the recovery of
194 the regulatory resource due to detachment. Hence, we propose the following hypothesis:

195 *Hypothesis 1:* Psychological detachment moderates the positive relationship of SCDs
196 to indicators of job strain in such a way that the relationship is attenuated as a function of
197 psychological detachment.

198 We test the effects of psychological detachment on different indicators of job strain
199 and well-being. We use ego depletion and need for recovery as short-term indicators of
200 psychological well-being. Ego depletion refers to a state of regulatory resource depletion and
201 an inner experience of exhaustion resulting from SCDs (Baumeister et al., 1998). Need for
202 recovery reflects the need to recuperate from work tasks that is strongest in the last hours of
203 work and directly after work (Van Veldhoven & Broersen, 2003). Additionally, we use the
204 burnout dimensions emotional exhaustion and depersonalization to demonstrate that
205 psychological detachment also attenuates the effects of SCDs on long-term indicators of
206 strain. Emotional exhaustion is considered as the main component of burnout and is defined
207 as a state of depletion and fatigue resulting from one's work (Maslach & Jackson, 1981).
208 Depersonalization, another dimension of burnout, refers to the development of negative and
209 cynical feelings towards people at work (Maslach & Jackson, 1981).

210 **Study 1**

211 **Methods**

212 **Participants**

213 The data for our first study was obtained in cooperation with a German health care
214 provider. Data from 445 healthy participants was collected during a voluntary medical check-
215 up. The aim of this check-up was to assess employees' physical and psychological health and
216 identify risk factors that may impair employees' health. Data collection was conducted by
217 physicians that applied self-report measures of all study variables. Most participants were
218 occupied in the financial sector and provided customer service and sold financial products.
219 Thus, they interacted with clients on a regular basis. Because most people tend to be very
220 cautious about issues concerning money, employees were expected to explain products and
221 services multiple times to ensure that customers understand all details. Additionally, to
222 encourage customers to entrust their money to the financial institution, employees must

223 control impulses to refrain from speaking and behaving in a way that creates an atmosphere
224 of distrust and insecurity. Employees also frequently deal with difficult customers, foremost
225 when handling complaints (e.g. false transactions or illegitimate withdrawals). During these
226 interactions, employees always have to remain friendly even when responding to clients that
227 behave in a rude or unfriendly manner. These job descriptions imply that self-control is an
228 integral part of the participants' work roles. Because participants signed up voluntarily for
229 examination, the response rate was 100%. The proportion of female participants was 29.0%
230 and age ranged from 35 to 63 years ($M = 49.77$; $SD = 6.00$).

231 **Measures and control variables**

232 We assessed SCDs with ten items from the SCDs scale developed by Schmidt and
233 Neubach (2007). On a 5-point Likert scale (1 = not at all; 5 = a great deal), participants rated
234 their work in terms of the requirements to resist distractions, overcome inner blockades, and
235 control impulses to maintain behaviours at work that are controlled and restrained.

236 Exemplary items are "My job requires me never to lose my temper" and "I am never allowed
237 to lose my self-control at work". Because all three facets of SCDs were expected to draw on
238 and deplete a common regulatory resource, we computed the scale score as the average of the
239 single item scores (see also Schmidt et al., 2012).

240 Psychological detachment (four items) was assessed with the detachment subscale
241 from the recovery experience questionnaire developed by Sonnentag and Fritz (2007).

242 Participants were asked to indicate the extent to which they are occupied with job-related
243 thoughts in leisure time (1 = not at all; 5 = a great deal). A typical item from the scale is
244 "During evenings, I don't think about work at all".

245 To assess ego depletion, we used four items from the German translation (Bertrams,
246 Unger, & Dickhäuser, 2011) of the state self-control capacity scale from Ciarocco, Twenge,
247 Muraven, and Tice (2007). An example for an item is "I feel like my willpower is gone".

248 Need for recovery was measured with five items from the Need for Recovery Scale (Van
249 Veldhoven & Broersen, 2003). An item from the scale is “I find it difficult to relax at the end
250 of a working day.” Ego depletion and need for recovery were both rated on a 4-point Likert
251 scale (1 = never; 5 = always).

252 The burnout dimensions of emotional exhaustion (eight items) and depersonalization
253 (four items) were assessed with the German translation (Büssing & Perrar, 1992) of the
254 Maslach Burnout Inventory (Maslach & Jackson, 1981; 1986). Exemplary items are “I feel
255 emotionally drained from my work” (emotional exhaustion) and “I have become more callous
256 toward people since I took this job” (depersonalization). The items were rated on a 6-point
257 Likert scale (1 = not at all; 5 = very strong)

258 **Results**

259 Descriptive statistics including internal consistencies are presented in Table 1.

260 - Insert Table 1 about here -

261 **Measurement models**

262 We conducted confirmatory factor analyses (CFA) to test the differentiability of the
263 predictors and the criterion variables. SCDs and psychological detachment were tested in a
264 one-factor model that integrates both predictors into one factor, and a two-factor model that
265 specifies SCDs and detachment as separate constructs. Fit indices indicated that a two-factor
266 model yielded a better data approximation for the predictors than a one-factor model (cf.
267 Table 2).

268 CFAs also provided support for the psychometrical distinctiveness of all outcome
269 variables. We tested ego depletion, need for recovery, emotional exhaustion and
270 depersonalization in a four-factor model that yielded a good data approximation (cf. Table 2).
271 In contrast, a one-factor model showed a poor fit (cf. Table 2). In sum, measurement models

272 that distinguished between the predictor and the criterion variables accordingly, provided the
273 best data fit.

274 - Insert Table 2 about here -

275 **Analysis of main and interaction Effects**

276 We tested our hypothesis that psychological detachment moderates the relationship
277 between SCDs and indicators of strain by means of hierarchical moderated regression. In the
278 first step, we entered demographic variables (age and gender) into the regressions to control
279 for their potential confounding influences on the relationships under examination. In the
280 second step, we added the main predictors SCDs and detachment. In the third step, the
281 interaction term between SCDs and detachment was added into the regressions. The
282 significance test for the interaction effect is based on the variance explained by the cross-
283 product over and above that accounted for by the main effects. To avoid biased estimations
284 due to multicollinearity, we standardized both predictors prior to calculating the cross-
285 product term (cf. Aiken & West, 1991).

286 The results are presented in Table 3. After controlling for biographical data, SCDs
287 and detachment yielded significant effects on all indicators of strain, with signs
288 corresponding to expectations. The direct effects were positive for SCDs and negative for
289 detachment (cf. Table 3). Moreover, and theoretically more important, the interaction effects
290 of SCDs and detachment explained additional and significant proportions of variance in all
291 outcomes (cf. Table 3). The incremental amounts of variance explained by the interaction
292 effects varied between 1% and 2%.

293 - Insert Table 3 about here -

294 To facilitate the interpretation of the findings, we plotted the interaction patterns (cf.
295 Figure 1). As can be seen, SCDs and detachment had a comparable interactive influence on
296 all indicators of strain, the form of which clearly confirms the hypothesized buffer function of

297 psychological detachment. For employees with low levels of detachment, the adverse impact
298 of SCDs on all four indicators of strain were much more pronounced than for employees with
299 high levels of detachment. Thus, we were able to confirm our hypothesis in the first sample.
300 Simple slope analyses (Aiken & West, 1991) demonstrated that for all outcomes the slopes
301 for high (one SD above the mean) and low (one SD below the mean) detachment were
302 significantly different from zero (cf. Figure 1). Thus, detachment does not completely nullify
303 the adverse effect of SCDs but rather mitigates the adverse effects of SCDs on strain.

304 - Insert Figure 1 about here -

305 **Discussion of Study 1**

306 The findings of our initial study provide support for our prediction that detachment
307 attenuates the adverse effect of SCDs on strain. Our analyses demonstrate that the positive
308 relationships between SCDs and indicators of psychological strain (ego depletion, need for
309 recovery, emotional exhaustion and depersonalization) were attenuated as a function of
310 detachment. Thus, employees who detach from work in leisure time are less susceptible to
311 strain resulting from high SCDs, compared to employees who do not detach from work in
312 leisure time.

313 Even though, our first study provides convincing evidence for the buffering effect of
314 psychological detachment, some aspects still remain unclear. First, it is not certain whether
315 and to what extent the buffering effect of detachment is generalizable across different
316 samples and contexts. Second, in light of our proposition that the buffering function of
317 detachment is essentially based upon the psychological mechanism of recovery of limited
318 regulatory resources (required for coping with SCDs), it is also unclear, whether detachment
319 may also attenuate the adverse effects of stressors, which operate and tax other mechanisms
320 than depletion of regulatory resources. To address these points, we conducted a second study
321 which aimed at testing the moderating effect of detachment on the adverse impact of SCDs in

322 another sample. In addition, we examined the effects of detachment on the positive
323 relationship of job ambiguity and strain. Evidence on differential moderating effects of
324 detachment on different stressor-strain relationships may point to relevant work-related
325 boundary conditions under which detachment may or may not be useful to prevent strain.

326 **Study 2**

327 **Differential interaction effects of psychological detachment with SCDs and job** 328 **ambiguity**

329 In Study 1, we demonstrated that psychological detachment buffers the adverse
330 impact of SCDs on strain. In Study 2, we seek to test whether detachment can also buffer
331 other stressor-strain relationships. Thus, we examine detachment as a moderator of the
332 adverse impact of job ambiguity on strain. Role theory suggests that job ambiguity is
333 considered to be an inherently “noxious” (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964),
334 and thus, stressful state (Breugh & Colihan, 1994). In general, job ambiguity is
335 characterized by high uncertainty, a lack of opportunities to plan ahead and unpredictable
336 events that cause employees to engage in coping strategies such as defensive strategies which
337 distort the reality of the situation. These coping strategies should increase the probability that
338 individuals will be dissatisfied with their job role (Rizzo, House, & Lirtzman, 1970) and lead
339 to strain through detrimental individual appraisal processes (Monat et al., 1972). On the basis
340 of our theoretical proposition that the adverse effect of job ambiguity is mainly driven by
341 other mechanisms than regulatory resource depletion (e.g. appraisal processes; Monat, et al.,
342 1972), we predict that restoring the regulatory resources through detachment should be less
343 effective in buffering the adverse impact of job ambiguity on strain than the adverse impact
344 of SCDs. Hence, we propose the following hypothesis:

345 *Hypothesis 2:* The buffering effect of psychological detachment is stronger on the
346 relationship of SCDs with strain than on the relationship of job ambiguity with strain.

347 Method**348 Participants**

349 The participants of the second study were recruited from a German financial service
350 provider. 705 employees were contacted via e-mail to participate in an online survey that was
351 conducted during normal working hours. Out of all contacted employees, 458 employees
352 agreed to participate in our survey. Because of missing responses, 32 individuals were
353 excluded from the analyses. Hence, the overall response rate was 60.4%. The final analyses
354 were conducted on the basis of a sample of $N = 426$ persons. Because we addressed
355 employees from different departments of the organization, we received data from individuals
356 working in different occupational fields. A major part of our sample (73%) worked as
357 financial consultants. Like the participants in the first sample, their main task was selling
358 products and consulting customers (e.g. private customers, business customers). Another part
359 of the sample (15%) worked in the administration department, and 12% were employed in
360 managerial positions and thus, had leadership responsibilities. The work of last both groups
361 was characterized by less frequent client interactions than the work of consultants.
362 Additionally, at work these employees have to face situations that are characterized by lack
363 of information about work methods, work-schedules and goals. For example, financial
364 consultants have to decide about customers being credit-worthy based on the incomplete
365 information that they receive from clients. Furthermore, because clients may arrive and call
366 anytime requesting customer service, it is difficult for employees to properly structure their
367 work tasks. These examples indicate that in their jobs, participants experience different facets
368 of job ambiguity. Again, participation was voluntary and all participants were assured that
369 their responses would remain confidential. Participants' age ranged from 18 to 60 years ($M =$
370 39.12 ; $SD = 10.64$). Out of all participants, 44 % were women, and 23 % were part-time
371 employed. The mean organizational tenure was 18.1 years ($SD=10.85$).

372 Measures and control variables

373 The assessment of SCDs, psychological detachment, ego depletion, need for recovery,
374 emotional exhaustion, and depersonalization were based on the same instruments as in the
375 first study.

376 Job ambiguity was measured with nine items from a scale developed by Breugh and
377 Colihan (1994), which was translated and validated in German language by Sodenkamp and
378 Schmidt (2000). On a 7-point Likert scale (1 = not at all; 7 = a great deal), participants
379 indicated their perceived lack of job-related information with regard to work methods, work-
380 schedules and goals. Because these three facets of job ambiguity are closely related, we
381 integrated them into a single scale score as recommended by Breugh and Colihan (1994).
382 An example for an item is “I know how to get my work done (what procedures to use)”. All
383 items were recoded so that higher scores indicated higher job ambiguity.

384 Results**385 Descriptive statistics**

386 Descriptive statistics including internal consistencies are presented in Table 4.

387 - Insert Table 4 about here -

388 Measurement models

389 Confirmatory factor analyses were used to test the differentiability of the predictors.
390 In the second sample, SCDs, job ambiguity, and psychological detachment were tested as
391 separate factors in a three-factor model (cf. Table 5). Fit indices demonstrated that a three-
392 factor model yielded a better data approximation for the predictors than a one-factor model
393 that integrates all predictors into one construct (cf. Table 5). CFAs also provided support for
394 the distinctiveness of all outcome variables. As in the first study, ego depletion, need for
395 recovery, emotional exhaustion, and depersonalization were tested in a four-factor model

396 which indicated a good data approximation (cf. Table 5). By way of comparison, a one-factor
397 model provided a worse fit (cf. Table 5).

398 - Insert Table 5 about here -

399 **Analysis of main and interaction effects**

400 As in the first study, we conducted hierarchical moderated regression analyses to test
401 our hypotheses. In the first step, we added control variables (gender, age, leadership position
402 and working time status) into the regressions predicting indicators of strain. In the second
403 step, we introduced the main predictors SCDs, job ambiguity, and detachment into the
404 regressions. In the third step, the interaction terms between SCDs and detachment on the one
405 hand and job ambiguity and detachment on the other hand were entered into the regressions.
406 Again, before calculating the product terms and introducing all variables into the regressions,
407 predictors were standardized, in order to reduce the risk of multicollinearity (cf. Aiken &
408 West, 1991).

409 The moderated regression results are presented in Table 6. As in the first study, SCDs
410 and detachment yielded significant direct effects on all indicators of strain with signs
411 corresponding to expectations (cf. Table 6). In addition, job ambiguity was negatively related
412 to all indicators of strain (cf. Table 6).

413 In accordance with Hypothesis 1, the interaction term between SCDs and
414 psychological detachment accounted for significant amounts of variance in all indicators of
415 strain (cf. Table 6). In contrast, the interaction term of job ambiguity and detachment did not
416 explain additional proportions of variance in all outcomes (cf. Table 6). These results provide
417 initial support for Hypothesis 2, that the interaction effect of detachment and SCDs on strain
418 is stronger than the interaction effect of detachment and job ambiguity on strain.

419 - Insert Table 6 about here -

420 To compare the strength of the SCDs-detachment and the job ambiguity-detachment
421 interactions on strain, we computed the differences (β_{diff}) between both interaction terms
422 (SCDs-detachment and job ambiguity-detachment) for all indicators of strain and calculated
423 90% confidence intervals (CI; Zou, 2007). A CI that did not include zero indicates a
424 significant difference between both interaction terms at the 5% level (one-tailed test). For ego
425 depletion and need for recovery, the differences between interaction terms were $\beta_{\text{diff}} = -0.65$
426 and $\beta_{\text{diff}} = -0.08$, respectively. The 90% CIs for both short-term outcomes (ego depletion: -
427 .177, .048; need for recovery: -.187, .038) did include zero indicating that detachment was
428 not stronger in buffering the adverse effects of SCDs than the adverse effects of job
429 ambiguity on these indicators of strain. For emotional exhaustion and depersonalization, the
430 differences between both interaction terms were $\beta_{\text{diff}} = -0.14$ and $\beta_{\text{diff}} = -0.13$, respectively.
431 For these outcomes, both 90% CIs (emotional exhaustion: -.252, -.027; depersonalization: -
432 .242, -.017) did not include zero indicating that the SCDs-detachment interaction was
433 significantly stronger than the job ambiguity-detachment interaction. In sum, our results show
434 that detachment is more effective in buffering the adverse effects of SCDs than the adverse
435 effects of job ambiguity on emotional exhaustion and depersonalization.

436 We plotted the significant interaction effects of SCDs and psychological detachment
437 and conducted simple slope analyses (Aiken & West, 1991) which demonstrated that the
438 form of the moderating effects of detachment is comparable to those reported in the first
439 study (cf. Figure 2).

440 - Insert Figure 2 about here -

441 **General discussion**

442 The aims of the present studies were first to provide evidence that detachment
443 attenuates the relationship between SCDs and strain across different samples and second to
444 test the consistency of the buffering function of detachment across different kinds of

445 stressors. We conducted two studies to analyse the hypothesized relationships and
446 demonstrated that detachment indeed buffers the positive relationships between SCDs and
447 indicators of strain (ego depletion, need for recovery, emotional exhaustion, and
448 depersonalization). In Study 2, we further analysed whether the moderating effect of
449 detachment is a) generalizable across different samples and b) is also valid for stressors that
450 rely foremost on other mechanisms than regulatory resource depletion to cause strain. Again,
451 the results of our second study indicate that detachment buffers the relationship between
452 SCDs and indicators of strain demonstrating that our findings are generalizable across
453 different samples. Furthermore, we tested moderating effects of detachment on the adverse
454 impact of job ambiguity on strain and conducted contrastive comparisons between the SCDs-
455 detachment and job ambiguity-detachment interactions. Difference tests of the interaction
456 terms demonstrated a stronger effect of the SCDs-detachment interaction than the job
457 ambiguity-detachment interaction on the outcomes of emotional exhaustion and
458 depersonalization.

459 All in all, the present research contributes to the current stress literature in at least four
460 ways. First, our results deliver empirical evidence for detachment as a further moderator of
461 the relationship between SCDs and strain. Second, it provides evidence for the adverse
462 effects of SCDs and the buffering effects of detachment in multiple samples and for multiple
463 indicators of strain. Third, the present research integrates theories from the field of self-
464 control and recovery research to disentangle the mechanism that is responsible for the
465 attenuating effect of detachment. This mechanism involves recovery of the regulatory
466 resource that is depleted through SCDs at work. Fourth, our results demonstrate that
467 detachment is more effective in buffering SCDs that are supposed to deplete limited
468 regulatory resources as compared to job ambiguity that is supposed to cause strain through
469 other mechanisms such as adverse appraisal processes. Differential effects of detachment on

470 different stressor-strain relationships indicate that psychological detachment did not buffer
471 the adverse effects of all stressors but that it is only effective in buffering the adverse effects
472 of stressors that deplete limited regulatory resources.

473 **Theoretical and practical implications**

474 From a theoretical perspective, we integrate the lines of research on self-control and
475 recovery: The proposed recovery mechanism adds to our understanding of the relationships
476 between stressors, indicators of strain and psychological resources. It is possible that
477 previously published attenuating effects of detachment on specific stressor-strain
478 relationships such as job demands (Sonnentag et al., 2010) or workplace conflicts (Sonnentag
479 & Nägel, 2013) may at least partially rely also on recovery of regulatory resources. For
480 example, during workplace conflicts employees need to inhibit spontaneous responses such
481 as outbursts of anger. Since inhibiting spontaneous responses is also an integral part of the
482 SCDs construct (Schmidt & Neubach, 2007) and thus is thought to deplete regulatory
483 resources, one might argue that the moderating effects of detachment on the adverse effects
484 of workplace conflicts may be based upon recovery of regulatory resources.

485 From a practical point of view, findings in the present sour findings suggest that
486 detachment is able to reduce the adverse consequences of stressors that deplete regulatory
487 resources, such as SCDs. Thus, to prevent adverse consequences of these stressors,
488 practitioners need to develop interventions at the organizational and at the individual level
489 that enable detachment from work in leisure time. From the organizational point of view,
490 reducing day specific work hours, workload and time pressure may facilitate detachment.
491 Sonnentag and Bayer (2005) argue that these factors contribute to a prolonged activation of
492 job-related thoughts, which drag on into employees' leisure time. Thus, reducing these
493 factors should improve detachment. Another aspect of modern work that hinders employees
494 to detach from work is the increasing use of work-related mobile communication devices,

495 (Lanaj, Johnson, & Barnes, 2014). Work-related communication in leisure time may remind
496 employees of work related issues and thus prevent detachment. Therefore, it may be useful
497 for organizations to establish policies or guidelines for the use of mobile communication
498 devices. For example, car manufacturer Volkswagen disables e-mail communication 30
499 minutes after the end of the working day and allows it 30 minutes before the start of the next
500 working day (Spiegel Online, 2011).

501 From the individual perspective, employees may also enhance psychological
502 detachment by refraining from using work-related communication technologies in leisure
503 time. Furthermore, Ashforth, Kreiner, and Fugate (2000) proposed that high segmentation
504 between work and private life may prevent employees from being occupied with work-related
505 issues during leisure time and thus, enhance psychological detachment. In line with this
506 argument, Sonnentag, Kuttler, and Fritz (2010) suggest that being occupied with non-work
507 activities that require the individual's full attention may facilitate psychological detachment.
508 Another aspect that has been demonstrated to improve psychological detachment is recovery-
509 related self-efficacy. Sonnentag and Krueger (2006) argue that like task-related self-efficacy
510 (Bandura, 1997) recovery-related self-efficacy can be improved through mastery
511 experience, vicarious learning and verbal persuasion. Based on the previously mentioned
512 arguments, Hahn, Binnewies, Sonnentag, & Mojza (2011) developed a training program and
513 demonstrated beneficial impacts of this training on recovery experiences, recovery related
514 self-efficacy, and well-being.

515 **Limitations and suggestions for further research**

516 Despite the contributions, our studies are subject to several limitations, which need to
517 be discussed. First, most of the study variables were operationalized through self-report
518 measures. Thus, common method variance or a self-report bias might have contaminated the
519 relations observed (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, our results

520 show that psychological detachment interacts with SCDs but does not interact with job
521 ambiguity to predict emotional exhaustion and depersonalization. The differential influences
522 resulting from the combination of detachment with either SCDs or job ambiguity are unlikely
523 to be attributable to common method variance because such variance tends to blur differential
524 relationships. Furthermore, the differentiability of the predictors as well as the criterion
525 variables as indicated by CFAs also demonstrates that common method bias is rather
526 unlikely. Nevertheless, future research could gain more methodological clarity and practical
527 significance by considering more event-related and situation-based approaches for measuring
528 SCDs at work (Reis & Gable, 2000).

529 The second limitation refers to the cross-sectional design of our studies. Although we
530 hypothesized a particular causal order of the variables, other causal directions or even
531 reciprocal relations could be possible as well. For example, an alternative reverse causal
532 interpretation of the results might be that employees in high strain jobs perceive self-control
533 demands as more threatening than employees in low strain jobs. However, several
534 longitudinal studies have provided strong empirical arguments against this hypothesis (for an
535 overview, see Zapf, Dormann, & Frese, 1996). For example, drawing on a cross-lagged panel
536 design, Diestel and Schmidt (2011) have found SCDs to predict burnout and absenteeism
537 whereas, the lagged effects of burnout and absenteeism on SCDs at a later point in time failed
538 to reach significance.

539 The third limitation is related to our prediction that detachment is more effective in
540 buffering the adverse impact of SCDs than the adverse impact of job ambiguity on strain. Our
541 data showed that there was a significant difference between the interaction terms on the
542 outcomes of emotional exhaustion and depersonalization. However, our analyses failed to
543 provide corresponding differences between the interaction terms predicting ego depletion and
544 need for recovery. However, these results must be interpreted carefully because a

545 precondition for the test to compare interaction terms is that these terms follow a normal
546 distribution. However, Kendall & Stuart, (1958) demonstrated that interaction terms in
547 moderator analysis are not normally distributed. Hence, the test may have failed to
548 demonstrate significant differences in the outcomes ego depletion and need for recovery.

549 Furthermore, it is possible that methodological drawbacks such as measurement
550 deficits or flaws in study design (McClelland & Judd, 1993) may have prevented us from
551 demonstrating moderating effects of detachment on the adverse impact of job ambiguity.
552 However, according to previous research the job ambiguity measure as it is used in our study
553 is valid and highly reliable (Breugh & Colihan, 1994; Schmidt & Hollmann, 1998).
554 Accordingly, our measurement of job ambiguity is more reliable than our measurement of
555 SCDs (cf. Table 2). Thus, it is highly unlikely that measurement deficits have influenced our
556 results. Furthermore, because deficits in our study design (e.g. common method bias) should
557 apply to SCDs and job ambiguity likewise, it is also highly unlikely that these deficits have
558 influenced our results.

559 Additionally, one might argue that our findings concerning the absent moderating
560 effect of detachment on the adverse impact of job ambiguity may be random or exploratory in
561 nature. However, matching hypothesis suggests that a functional match between stressors and
562 buffering moderators increases the strength of interaction effects on strain (Cohen & McKay,
563 1984; Cohen & Wills, 1985). On the basis of the argument that SCDs deplete common
564 regulatory resources and detachment recovers these resources, psychological detachment
565 matches better with SCDs than with job ambiguity that relies for the most part on appraisal
566 mechanisms to cause strain. Thus, the effect of the SCDs-detachment interaction on strain
567 should be as hypothesized stronger than the effect of the job ambiguity-detachment
568 interaction on strain. Consequently, the demonstrated differential effects of detachment
569 correspond with the matching hypothesis and thus are not likely to reflect random effects.

570 This theoretical notion is further supported by the fact that we demonstrated consistent
571 relationships of the SCDs-detachment interaction to four different indicators of strain that
572 according to our CFAs are distinct. In contrast, we consistently demonstrated that detachment
573 did not moderate the adverse impact of job ambiguity on all four indicators of strain. The
574 consistency of the differential effects on distinct indicators of strain strongly suggests that our
575 findings are not random or exploratory in nature but that we deliberately chose job ambiguity
576 as a stressor to demonstrate that detachment does not moderate all kinds of stressors.

577 **Conclusions**

578 In the present study, we analysed the impact of SCDs as a work stressor and
579 psychological detachment as a recovery experience on strain. In two different samples, we
580 were able to provide evidence that detachment attenuates the adverse effects of SCDs on
581 strain. Additionally, in the second sample we demonstrated that detachment was more
582 effective in buffering the adverse impact of SCDs than buffering the adverse impact of job
583 ambiguity. We hope that our study adds to the understanding of the relationships between
584 stressors, strain and buffering moderators and consequently provides employees and
585 organizations alike with the knowledge to protect employees from work-related stressors
586 depleting regulatory resources.

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References

589

Aiken, L. S., West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage.

590

591

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.

592

593

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

594

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74(5), 1252–1265.

595

596

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego: Academic Press.

597

598

Bertrams, A., Unger, A., & Dickhäuser, O. (2011). Momentan verfügbare Selbstkontrollkraft – Vorstellung eines Messinstruments und erste Befunde aus pädagogisch-psychologischen Kontexten. *Zeitschrift für Pädagogische Psychologie*, 25(3), 185–196.

600

601

Binnewies, C., Sonnentag, S., & Mojza, E. J. (2009). Daily performance at work: Feeling recovered in the morning as a predictor of day-level job performance. *Journal of Organizational Behavior*, 30(1), 67–93.

602

603

Breaugh, J. A., & Colihan, J. P. (1994). Measuring facets of job ambiguity: Construct validity evidence. *Journal of Applied Psychology*, 79(2), 191–202.

604

605

Büssing, A., & Perrar, K.-M. (1992). Die Messung von Burnout. Untersuchung einer deutschen Fassung des Maslach Burnout Inventory (MBI-D). [Measuring burnout: A study of a German version of the Maslach Burnout Inventory (MBI-D)]. *Diagnostica*, 38(4), 328–353.

606

607

608

609

610

611

- 612 Cascio, W. F. (2003). Changes in Workers, work, and organizations. In W. C. Borman, D. R.
613 Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology* (pp. 401–422). Hoboken, NJ:
614 Wiley.
- 615 Ciarocco, N. J., Twenge, J. M., Muraven, M. & Tice, D. M. (2007). Measuring state self-
616 control: Reliability, validity, and correlations with physical and psychological stress.
617 *Unpublished Manuscript*, Monmouth University, NJ, USA.
- 618 Cohen, S., & McKay, G. (1984). Social support, stress and the buffering hypothesis: A
619 theoretical analysis. *Handbook of psychology and health*, 4, 253-267.
- 620 Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering
621 hypothesis. *Psychological bulletin*, 98(2), 310.
- 622 Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis.
623 *Psychological bulletin*, 98(2), 310.
- 624 De Jonge, J., & Dormann, C. (2006). Stressors, resources, and strain at work: A longitudinal
625 test of the triple-match principle. *Journal of Applied Psychology*, 91(6), 1359.
- 626 Diestel, S., & Schmidt, K.-H. (2011). Costs of simultaneous coping with emotional
627 dissonance and self-control demands at work: Results from two German samples.
628 *Journal of Applied Psychology*, 96, 643–653. doi:10.1037/a0022134
- 629 Diestel, S., & Schmidt, K-H. (2012). Lagged mediator effects of self-control demands on
630 psychological strain and absenteeism. *Journal of Occupational and Organizational*
631 *Psychology*, 85(4), 556–578.
- 632 Etzion, D., Eden, D., & Lapidot, Y. (1998). Relief from job stressors and burnout: Reserve
633 service as a respite. *Journal of Applied Psychology*, 83(4), 577–585.
- 634 Hagger, M. S., Wood, C., Stiff, C., & Chatzisarantis, N. L. D. (2010). Ego depletion and the
635 strength model of self-control: A meta-analysis. *Psychological Bulletin*, 136(4), 495–
636 525.

- 637 Hahn, V. C., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning how to recover
638 from job stress: Effects of a recovery training program on recovery, recovery-related
639 self-efficacy, and well-being. *Journal of Occupational Health Psychology*, 16(2), 202.
- 640 Kendall, M. G., & Stuart, A. (1958). *The Advanced Theory of Statistics*, Vol. 1, London:
641 Charles Griffin and Co.
- 642 Lanaj, K., Johnson, R. E., & Barnes, C. M. (2014). Beginning the workday yet already
643 depleted? Consequences of late-night smartphone use and sleep. *Organizational
644 Behavior and Human Decision Processes*, 124(1), 11-23.
- 645 Maslach, C., & Jackson, S. E. (1981). *Maslach Burnout Inventory*. Palo Alto, Calif:
646 Consulting Psychologists Press.
- 647 Maslach, C., & Jackson, S. E. (1986). *Maslach Burnout Inventory* (2nd ed.). Palo Alto, Calif:
648 Consulting Psychologists Press.
- 649 McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and
650 moderator effects. *Psychological Bulletin*, 114(2), 376-390.
- 651 Meijman, T., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H.
652 Thierry, & C. J. D. Wolff (Eds.), *Handbook of work and organizational psychology.
653 Vol. 3. Personnel psychology (2nd ed.)*. Hove: Psychology Press.
- 654 Monat, A., Averill, J. R., & Lazarus, R. S. (1972). Anticipatory stress and coping reactions
655 under various conditions of uncertainty. *Journal of Personality and Social
656 Psychology*, 24(2), 237-253.
- 657 Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources:
658 Does self-control resemble a muscle? *Psychological Bulletin*, 126(2), 247-259.
- 659 Muraven, M., Tice, D. M., & Baumeister, R. F. (1998). Self-control as a limited resource:
660 Regulatory depletion patterns. *Journal of Personality and Social Psychology*, 74(3),
661 774-789.

- 662 Neubach, B., & Schmidt, K.-H. (2006). Beanspruchungswirkungen von
663 Selbstkontrollanforderungen und Kontrollmöglichkeiten bei der Arbeit. *Zeitschrift für*
664 *Psychologie*, 214(3), 150–160.
- 665 Oaten, M., & Cheng, K. (2005). Academic examination stress impairs self-control. *Journal*
666 *of Social and Clinical Psychology*, 24(2), 254–279.
- 667 Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method
668 biases in behavioral research: A critical review of the literature and recommended
669 remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- 670 Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). Adaptability in the
671 workplace: Development of a taxonomy of adaptive performance. *Journal of Applied*
672 *Psychology*, 85(4), 612–624.
- 673 Reis, H. T., & Gable, S. L. (2000). Event-sampling and other methods for studying everyday
674 experience. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in*
675 *social and personality psychology*. New York: Cambridge University Press.
- 676 Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex
677 organizations. *Administrative science quarterly*, 150-163.
- 678 Schmeichel, B. J., Vohs, K. D., & Baumeister, R. F. (2003). Intellectual performance and ego
679 depletion: Role of the self in logical reasoning and other information processing.
680 *Journal of Personality and Social Psychology*, 85(1), 33–46.
- 681 Schmidt, K.-H. & Diestel, S. (2012). The relation of self-control demands to job strain: The
682 moderating role of organizational commitment. *Applied Psychology: An International*
683 *Review*, 61(3), 479-497.
- 684 Schmidt, K. H., & Hollmann, S. (1998). Eine deutschsprachige Skala zur Messung
685 verschiedener Ambiguitätsfacetten bei der Arbeit. *Diagnostica*, 44(1), 21-29.

- 686 Schmidt, K.-H., Hupke, M., & Diestel, S. (2012). Does dispositional capacity for self-control
687 attenuate the relation between self-control demands at work and indicators of job
688 strain? *Work & Stress*, 26(1), 21–38.
- 689 Schmidt, K.-H., & Neubach, B. (2007). Self-control demands: A source of stress at work.
690 *International Journal of Stress Management*, 14(4), 398-416.
- 691 Sodenkamp, D., & Schmidt, K.-H. (2000). Weiterentwicklung und Konstrukt-Validierung
692 eines Verfahrens zur Messung erlebter Rollenambiguität bei der Arbeit. *Zeitschrift für*
693 *Arbeitswissenschaft*, 54, 37-43.
- 694 Sonnentag, S., & Bayer, U. V. (2005). Switching off mentally: Predictors and consequences
695 of psychological detachment from work during off-job time. *Journal of Occupational*
696 *Health Psychology*, 10(4), 393–414.
- 697 Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when
698 demands are high: The role of psychological detachment. *Journal of Applied*
699 *Psychology*, 95(5), 965–976.
- 700 Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and
701 validation of a measure for assessing recuperation and unwinding from work. *Journal*
702 *of Occupational Health Psychology*, 12(3), 204–221.
- 703 Sonnentag, S., & Krueger, U. (2006). Psychological detachment from work during off-job time:
704 The role of job stressors, job involvement, and recovery-related self-efficacy.
705 *European Journal of Work and Organizational Psychology*, 15(2), 197–217.
- 706 Sonnentag, S., Kuttler, I., & Fritz, C. (2010). Job stressors, emotional exhaustion, and need
707 for recovery: A multi-source study on the benefits of psychological detachment.
708 *Journal of Vocational Behavior*, 76(3), 355–365.

- 709 Sonnentag, S., Unger, D., & Nägel, I. J. (2013). Workplace conflict and employee well-
710 being: The moderating role of detachment from work during off-job time.
711 *International Journal of Conflict Management*, 24(2), 166-183.
- 712 Spiegel Online. (2011). *Blackberry-brake: VW-Union enforces e-mail stop during leisure*
713 *time*. (2011). Retrieved 11 February 2013 from
714 [http://www.spiegel.de/wirtschaft/service/blackberry-pause-vw-betriebsrat-setzt-e-](http://www.spiegel.de/wirtschaft/service/blackberry-pause-vw-betriebsrat-setzt-e-mail-stopp-nach-feierabend-durch-a-805524.html)
715 [mail-stopp-nach-feierabend-durch-a-805524.html](http://www.spiegel.de/wirtschaft/service/blackberry-pause-vw-betriebsrat-setzt-e-mail-stopp-nach-feierabend-durch-a-805524.html).
- 716 Van Veldhoven, M. J. P. M., & Broersen, S. (2003). Measurement quality and validity of the
717 “need for recovery scale”. *Occupational and Environmental Medicine*, 60(suppl 1),
718 i3-i9..
- 719 Zapf, D., Dormann, C., & Frese, M. (1996). Longitudinal studies in organizational stress
720 research: A review of the literature with reference to methodological issues. *Journal*
721 *of Occupational Health Psychology*, 1(2), 145–169.
- 722 Zou, G. Y. (2007). Toward using confidence intervals to compare correlations. *Psychological*
723 *Methods*, 12(4), 399-413.

Table 1

Means, Standard Deviations, Internal Consistencies (Cronbach's Alpha) and Intercorrelations (Study 1)

Variable	1	2	3	4	5	6	7	8
1. Age	–							
2. Gender ^a	.13	–						
3. Self-control demands	.06	.03	(.85)					
4. Psychological detachment	-.08	-.03	-.37	(.92)				
5. Ego depletion	.09	.03	.46	-.46	(.84)			
6. Need for recovery	.12	-.07	.44	-.59	.65	(.86)		
7. Emotional exhaustion	.10	.05	.54	-.55	.73	.78	(.90)	
8. Depersonalization	.04	.11	.37	-.34	.49	.44	.63	(.71)
<i>M</i>	49.77	1.59	3.25	3.35	1.63	1.95	2.37	1.69
<i>SD</i>	6.00	0.49	0.67	0.85	0.55	0.65	1.00	0.76

Note. ^aGender (1 = female, 2 = male). Internal consistency estimates (Cronbach's alpha) are presented in parentheses in the diagonal.

Numbers in bold $p < .05$. $N = 445$.

Table 2

Results of Confirmatory Factor Analyses for Testing the Differentiability of the Variables (Study 1)

	χ^2	<i>df</i>	RMSEA	<i>CI</i> _{90% (RMSEA)}	SRMR	CFI	AIC	BIC
<i>Measurement models of predictors</i>								
2-factor model	2.20 ^{n.s.}	4	.000	.000 – .054	.006	1.000	3939.34	4004.91
1-factor model ^a	408.61 ^{**}	5	.426	.391 – .461	.147	.621	4374.82	4436.29
<i>Measurement models of criteria</i>								
4-factor model	19.51 ^{n.s.}	14	.030	.000 – .058	.011	.997	5848.68	5971.62
1-factor model ^b	262.57 ^{**}	20	.165	.148 – .183	.062	.872	6136.33	6234.68

Note. ^aSelf-control demands and Psychological detachment as one factor; ^bEgo depletion, Need for recovery, Emotional exhaustion and Depersonalization as one factor.

* $p < .05$. ** $p < .01$. $N = 445$.

Table 3

Regression Results (β Values) for Study 1.

Variable	Ego depletion			Need for recovery			Emotional exhaustion			Depersonalization		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Gender	.09	.04	.03	.13 **	.08 *	.08 *	.09	.04	.03	.03	-.00	-.01
Age	.02	.01	.01	-.08	-.10 *	-.10 *	.04	.03	.03	.11 *	.10 *	.10 *
Self-control demands		.36 **	.37 **		.28 **	.29 **		.41 **	.42 **		.29 **	.29 **
Psychological detachment		-.28 **	-.25 **		-.41 **	-.38 **		-.36 **	-.34 **		-.22 **	-.20 **
Interaction ^a			-.15 **			-.13 **			-.12 **			-.10 *
$R^2(\Delta R^2)$.01(.01)	.29(.28)	.30(.01)	.02(.02)	.35(.33)	.36(.01)	.01(.01)	.41(.40)	.43(.02)	.02(.02)	.19(.17)	.20(.01)
F for change in R^2	1.89	86.99**	14.15**	4.92**	112.02**	10.36**	2.62	154.81**	11.31**	3.31*	48.50**	4.84*

Note. ^aSCDs x Psychological detachment* $p < .05$. ** $p < .01$. $N = 445$.

Table 4

Means, Standard Deviations, Internal Consistencies (Cronbach's Alpha) and Intercorrelations (Study 2)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Age	–										
2. Gender ^a	.12	–									
3. Leadership position ^b	-.20	-.27	–								
4. Working time status ^c	-.14	-.43	-.20	–							
5. Self-control demands	.09	-.01	.03	.03	(.80)						
6. Job ambiguity	.16	-.01	.01	-.06	.21	(.90)					
7. Psychological detachment	-.05	.00	.07	-.05	-.42	-.18	(.93)				
8. Ego depletion	.11	-.02	.16	.05	.45	.33	-.47	(.86)			
9. Need for recovery	.08	-.01	.01	.15	.46	.23	-.59	.64	(.86)		
10. Emotional exhaustion	.03	.04	.10	.11	.53	.37	-.51	.73	.69	(.88)	
11. Depersonalization	-.14	.14	.01	.12	.34	.37	-.31	.46	.48	.63	(.71)
<i>M</i>	39.12	1.44	1.88	1.78	3.45	2.77	2.89	1.74	2.12	2.63	2.05
<i>SD</i>	10.64	0.50	0.33	0.42	0.56	0.95	0.97	0.56	0.68	0.93	0.87

Note. ^aGender (1 = female, 2 = male), ^bLeadership position (1=leadership position, 2=no leadership position), ^cWorking time status

(1 = part time, 2 = full time). Internal consistency estimates (Cronbach's alpha) are presented in parentheses in the diagonal.

Numbers in bold $p < .05$. $N = 426$.

Table 5

Results of Confirmatory Factor Analyses for Testing the Differentiability of the Variables (Study 2)

	χ^2	<i>df</i>	RMSEA	<i>CI</i> _{90% (RMSEA)}	SRMR	CFI	AIC	BIC
<i>Measurement models of predictors</i>								
3-factor model	11.84 ^{<i>n.s.</i>}	17	.000	.000 – .028	.012	1.000	6178.12	6287.59
1-factor model ^a	1401.44 ^{**}	20	.403	.385 – .421	.211	.284	7580.47	7677.77
<i>Measurement models of criteria</i>								
4-factor model	23.14 ^{<i>n.s.</i>}	14	.039	.000 – .067	.014	0.996	5807.55	5929.18
1-factor model ^b	349.240 ^{**}	20	.197	.179 – .215	.066	.848	6141.87	6239.18

Note. ^aSelf-control demands, Job ambiguity and Psychological detachment as one factor; ^bEgo depletion, Need for recovery, Emotional

exhaustion and Depersonalization as one factor.

* $p < .05$. ** $p < .01$. $N = 426$.

Table 6

Regression Results (β Values) for Study 2.

Variable	Ego depletion			Need for recovery			Emotional exhaustion			Depersonalization		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Gender	-.04	-.02	-.03	-.11 *	-.08	-.09 *	.01	.03	.03	.15 **	.16 **	.15 **
Age	.17 **	.16 **	.16 **	.14 **	.10 *	.10 *	.08	.06	.06	-.14 **	-.14 **	-.14 **
Leadership position ^a	.20 **	.22 **	.22 **	.24 **	.18 **	.19 **	.15 **	.16 **	.16 **	.04	.04	.04
Working-time status ^b	.14 **	.10 *	.11 *	.05	.06	.06	.16 **	.11 *	.12 **	.04	.01	.02
Self-control demands		.23 **	.24 **		.22 **	.23 **		.33 **	.33 **		.21 **	.22 **
Job ambiguity		.25 **	.25 **		.11 **	.11 **		.25 **	.25 **		.27 **	.28 **
Psychological detachment		-.33 **	-.32 **		-.47 **	-.46 **		-.33 **	-.33 **		-.19 **	-.18 **
Interaction 1 ^c			-.10 *			-.08 *			-.10 **			-.11 *
Interaction 2 ^d			-.04			-.01			.04			.03
$R^2(\Delta R^2)$.06(.06)	.40(.34)	.41(.01)	.04(.04)	.43(.39)	.44(.01)	.04(.04)	.47(.43)	.48(.01)	.05(.05)	.27(.22)	.28(.01)
F for change in R^2	6.62**	77.87**	4.65*	5.24**	96.45**	2.77	3.95	114.67**	3.54*	4.99**	43.77**	3.27*

Note .^aLeadership position (1=leadership position, 2=no leadership position), ^bWorking time status (1=part time, 2=full time)

^cSCDs x Psychological detachment, ^dJob ambiguity x Psychological detachment.

* $p < .05$. ** $p < .01$. $N = 426$

Figure captions

Figure 1. Interaction effects of SCDs and Psychological detachment on Ego depletion, Need for recovery, Emotional exhaustion and Depersonalization (Study 1).

Figure 2. Interaction effects of SCDs and Psychological detachment on Ego depletion, Need for recovery, Emotional exhaustion and Depersonalization (Study 2).

Figure 1.

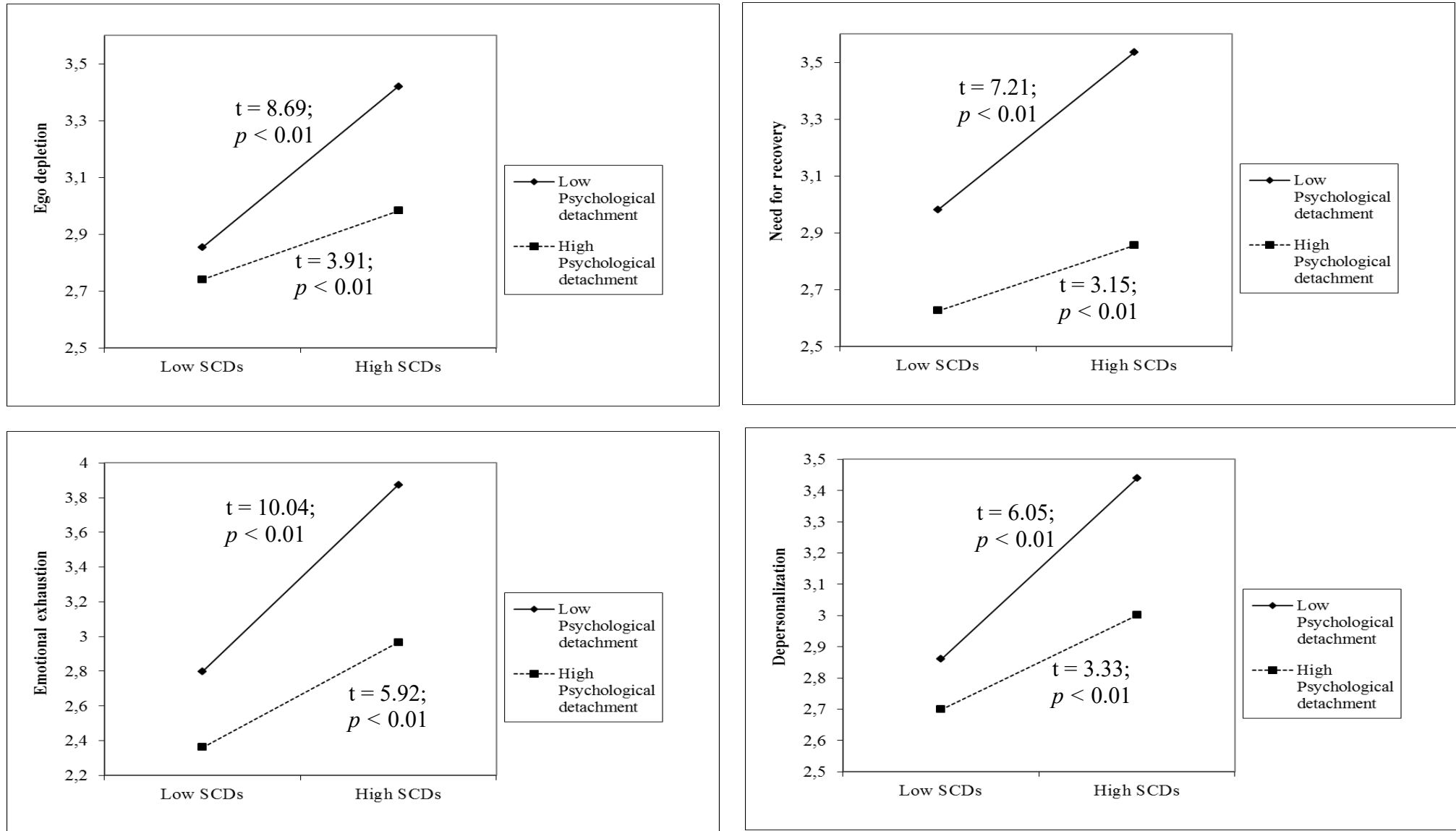


Figure 2.

