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ORIGINAL RESEARCH

Burnout as a State: Random-Intercept Cross-Lagged Relationship Between Exhaustion and Disengagement in a 10-Day Study

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Background: Burnout has been traditionally seen as a chronic and stable state in response to prolonged stress. However, measures of momentary burnout are not well established, even though the within-person approach suggests that the symptoms of burnout may vary from day to day for the same employee. The aim of this study is to examine the daily inter- and intra-personal variability of the symptoms of burnout and the cross-lagged relationship between two components of burnout, exhaustion and disengagement.

Methods: An online diary study over 10 consecutive workdays was conducted among 235 civil servants (75% women, average tenure of 15 years). Daily burnout was measured with the eight-item Oldenburg Burnout Inventory.

Results: The intra-class correlation coefficients indicate that, although significant between-person variability exists, most of the burnout variance is within persons. Using the random intercept cross-lagged panel (RI-CLP) model to control for these between-person differences, mainly insignificant "pure" within-person cross-lagged relationships between exhaustion and disengagement were revealed. Moreover, day-to-day autoregressive effects were weaker than same-day residual correlations.

Conclusion: This is one of the first studies to use daily diaries and the RI-CLP model to study burnout, including the separation of the more stable and more dynamic parts of each component. When stable parts were controlled for, the same-day relationships between exhaustion and disengagement were more pronounced than day-to-day effects. This might suggest stronger situational influences than carryover mechanism. Thus, conceptualizing burnout in terms of daily symptoms may shed promising insights into how it develops and add implications for pro-healthy changes in the workplace.

Keywords: burnout, diary study, multilevel analysis, cross-lagged effect, the Oldenburg Burnout Inventory

Introduction

A recent Gallup study conducted among nearly 7500 full-time employees found that two-thirds of respondents experience job burnout.[1] Job burnout is a psychological response to an adverse work environment that incurs substantial costs to employers, both in financial and organizational terms.[2] Employees who feel burned out more often take sick days, consider leaving their current job, and what is more, start looking for a new job.[3,4] They also have less productivity and poorer job performance.[5,6] However, job burnout can extend to other areas of life and impair psychological and social functioning. The individuals affected by burnout suffer

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also from low self-esteem, unsatisfactory social relations, a lack of balance between different areas of life.[7,8] Moreover, human service professionals have a higher rate of job burnout than blue-collar workers and professionals who do not work in areas of human services. For example, in the healthcare sector, it is estimated that between 35% and 80% are burned out, depending on the profession, and there has been an upward trend over the years.[9–11] Thus, employers are between a rock and a hard place. They need to protect their employees against job burnout, but they also need to stimulate productivity. Achieving these two conflicting goals requires new tools to detect employees who are getting burnt out, from those who are already burnt out. The traditional approach to job burnout focused on its chronic nature, thus longitudinal studies were preferred. However, new insights into job burnout can come from studies conducted in a daily design such as ecological momentary assessment and diary studies.

In diary studies, participants assess their feelings, thoughts, and attitudes repeatedly within the natural work context during several consecutive workdays. This method assumes fluctuations in the examined phenomena, for example, well-being, and focuses on variability between situations for the same person. It thus is useful to capture the short-term dynamics of experiences in the work context.[12] The advantages of such an approach are numerous. First, a within-person approach allows one to investigate how one phenomenon changes over a short time and how it influences change in other phenomena.[13] Second, the accompanied contextual time-variant factors can be identified and analyzed.[14] Third, diary studies limit retrospective bias and minimize the impact of respondents' memories.[12]

Theoretical models considering specific intra-individual processes to explain job-related well-being, with special focus on the timeframe of these processes, are promising.[15] Many aspects of well-being can be conceptualized not only in terms of stable interpersonal characteristics but also as dynamic states in response to changes in the objective and subjective environment. Thus, the study of within-individual fluctuations extends and complements the findings derived from the studies of between-individual differences.

The aim of this study is to examine the daily inter- and intra-personal variability of the symptoms of burnout and the cross-lagged relationship between two components of burnout, exhaustion and disengagement. To date, exhaustion and disengagement have seldom been examined in the same study, in spite of the fact that they may reciprocally influence each other when developing or sustaining burnout. The assumption that such micro-dynamics translates into macro-dynamics seems justified and other processes accelerating or buffering transition from symptoms to syndrome may be added to this picture. Thus, it moves us to the question of the mechanism of burn out, which may have a strong impact on both theory and practice.

Definition of Job Burnout

In the 11th revision of the International Classification of Diseases (ICD-11) in May 2019, the World Health Organization[16] describes job burnout as an occupational phenomenon that is embedded in the work context and refers to workplace stress that has not been managed. The definition of job burnout provided in this document stated that it is a syndrome including three dimensions: "feelings of energy depletion or exhaustion, increased mental distance from one's job or feelings of cynicism or negativism about one's job, and reduced professional efficacy".[16] This is a more detailed conceptualization than the one in the previous version of ICD (ICD-10).

The definition of job burnout in ICD-11 corresponds to the description by Maslach and Jackson,[17] who said it was a state of exhaustion, depersonalization, or cynicism and a lack of personal accomplishment. This is the most frequently used description of job burnout worldwide.[18] Some researchers emphasize that exhaustion, the leading component of job burnout, can be defined very broadly. The term may include not only depletion of emotional energy but also cognitive weariness and physical fatigue.[19,20] Exhaustion is accompanied by a distance from work, expressed by loss of enthusiasm, disengagement from work, and negative attitudes towards work.[21–23] Moreover, personal accomplishment was criticized because it was only slightly correlated with other components of burnout, and it was more related to personality traits.[24]

To address this issue, this study uses the newer conceptualization of job burnout proposed by Demerouti et al.[21,23] Job burnout is a syndrome comprising two components, exhaustion and disengagement. Exhaustion is described "as a consequence of intensive physical, affective and cognitive strain, that is, as a long-term consequence of prolonged exposure to certain job demands" (p. 201).[23] Contrary to Maslach and Jackson's approach, exhaustion in this definition refers directly to the whole spectrum of personal energetic resources. Disengagement is characterized by "distancing oneself from one's work in general, work object,

and work content" (pp. 210–211).[23] Compared to Maslach and Jackson's description, depersonalization is one form of disengagement or negative attitude toward customers, patients, and students. Hence, the syndrome of job burnout comprises exhaustion and disengagement, broadly understood. These two components are interrelated but separate constructs. This does not preclude measuring burnout as one factor of higher order.[22,25] However, for better understanding of job burnout as a syndrome, the two components should be also analyzed separately as they may be conditioned by other causes and perform different functions in the well-being of employees.

In line with the Job Demands–Resources theory,[26,27] excessive job demands and insufficient job resources intensify the deterioration of health and decrease motivation. In other words, higher job demands heighten exhaustion and further exacerbate the sicknesses and unhappiness.[28,29] Poor job resources enhance disengagement and, as a result, generate more severe personal costs of work. Job resources make it more difficult to cope with burdens, and they inhibit learning and growth.[21,30] In fact, exhaustion is more sensitive to excessive requirements and disengagement is more closely related to inadequate job resources. Finally, if workplace stress is not managed due to exhaustion and disengagement, it may lead to less productivity and performance[5,6,31,32] and negative attitudes toward work in general.[4,33–35]

Other researchers have a slightly different opinion. They hold that both components of job burnout, exhaustion and disengagement, are part of the health impairment process, but they have different functions.[27,36] When employees experience a higher level of exhaustion, they feel depletion of emotional energy, cognitive weariness, and physical fatigue. Hence, their personal resources are consumed. Employees threatened by an actual loss of resources make a greater effort to retain and protect their resources. Thus, they may disengage from work, become more cynical, and lose enthusiasm. This distancing from work is a specific protective mechanism facilitating conservation of personal resources.[37–39] It means that exhaustion can precede disengagement and burnout can start if one's energy resources are violated or consumed. This, in turn, leads to separation from work objects, work content, and one's work in general.[40]

To address this topic, it is necessary to examine how exhaustion and disengagement are interrelated in the perspective of time. However, most studies focus on the relationship between job burnout and work engagement only.[41] Only a few studies have focused directly on the components of burnout,[40] but they did not use the daily diary design, which allows researchers to differentiate between stable individual differences in burnout and the dynamics of daily changes. Thus, in this study, we want to investigate how symptoms of exhaustion and disengagement are interrelated day by day by systematically separating the state-like and trait-like components of these variables.

However, conceptually, state job burnout is distinct from trait job burnout. As mentioned above, a syndrome of job burnout refers to repeatability of symptoms or prolonged duration of symptoms.[16,34] Although being exhausted and disengaging from work once a week may be a common experience, feeling this way over a period of several consecutive weeks could be a cumulative effect of a series of repeated "states" of exhaustion and disengagement without sufficient recovery processes. Thus, all the employees may have better or worse days, but only some of them will develop burnout as a chronic syndrome, which may be conceptualized as high trait-like burnout.

Variability of Job Burnout Over Time

It is worth emphasizing that there is a consensus regarding burnout as a syndrome and that this is a psychological response to prolonged job-related stress.[2,34] Thus, job burnout is a chronic state that develops slowly from initial complaints to becoming a full-blown syndrome.[42–44] Some longitudinal studies confirmed that burnout changes over longer time,[45,46] therefore it is not only a stable outcome but a dynamic phenomenon. Recent studies suggest that it can also be changeable over a shorter time frame.[47]

The first and most intensive wave of such explorations were conducted on the relationship between exhaustion and psychological detachment.[48–50] These studies showed that the state of exhaustion varies from day to day, both within and between persons. There has also been a growing interest in the energy indicators of well-being with the same conclusion that symptoms of exhaustion fluctuated from day to day.[51] However, only a few studies examined the daily dynamics of exhaustion and cynicism simultaneously, informing that cynicism also varied from day to day but slightly less than exhaustion.[52,53]

We found only two studies in which the symptoms of burnout were measured by the Oldenburg Burnout Inventory, an instrument derived from the job demand-resources model of burnout.[23] In the first study, Hall et al[54] examined a small group of engineers for ten consecutive workdays that was the longest observation time for daily

burnout. Findings showed that fluctuation in the symptoms of burnout was greater in women than in men. In the next study, Halbesleben and Wheeler[55] tested changes in exhaustion solely in a heterogeneous group of employees, within five days. They found that day-level fluctuations in exhaustion impacted resource investment into various forms of job performance. Specifically, on the same workday higher exhaustion was associated with higher organizational citizenship behavior directed toward co-workers, lower in-role performance, and lower organizational citizenship behavior directed toward the organization.

An analysis of existing studies reveals some shortcomings. Typically, they were conducted in a very short time, that is, for four to five consecutive workdays, and used the Maslach Burnout Inventory. More importantly, as they did not consider interdependence of burnout components and focused more on exhaustion, they have neglected its importance in conjunction with disengagement. Finally, they did not pay enough attention to the statistical parametrization of the inter- and intra-personal variability of daily burnout symptoms. On the basis of data available from these papers, we calculated that 35% to 77% of job burnout variance was between-person and 33% to 65% was within-person. These wide ranges suggest a significant role of sample and context.

To address this gap in understanding burnout dynamics, we want to examine daily fluctuation of both exhaustion and disengagement using a 10-day diary study in a homogenous sample of civil servants working in public administration agencies. Therefore, it can be assumed that many organizational factors are essentially the same for all the participants. Moreover, the random-intercept cross-lagged panel model[56] will be implemented to distinguish relatively stable between-person differences from within-person autoregressive and cross-lagged relationships from one day to another. Thus, daily regression parameters reflect only truly intra-individual changes.

Method

Participants and Procedure

The white-collar employees from public administration agencies were invited to participate in the study. We established four inclusion criteria: their main tasks are connected with providing services to citizens, they work full-time, they are permanent employees and they have been in their positions for at least 6 months. A professional research agency recruited the respondents. All participants were informed about the protocol, and they provided informed consent. Respondents signed a contract that included the conditions for participating in the study and stated their rights according to ethical rules (the Helsinki Declaration). This study was approved by the Research Ethics Committee of SWPS University of Social Sciences and Humanities.

Of the 238 employees who were invited to participate in the online study, three (2%) declined to participate and did not provide any diary data. We did not note any further missing data, leaving a sample of 235 civil servants. They were well educated (19% had a college degree and 81% had a higher-education degree), and they were between 21 and 68 years old (mean age = 38 years, *SD* = 9.7). Most were women (75%, n = 175). Participants had between 1 and 43 years of job tenure (*M* = 15 years, *SD* = 10.4) and occupied their current posts for between 1 and 27 years (*M* = 7.5 years, *SD* = 6.3). Fifteen percent held managerial positions.

Each participant completed an online diary over 10 consecutive workdays (Monday to Friday for two weeks). Measures were taken when each workday was officially finished. At the end of the study, participants received symbolic remuneration.

Instrument

Daily job burnout symptoms, both exhaustion and disengagement, were as assessed by the eight-item Oldenburg Burnout Inventory (OLBI, Polish version)[23,57] that was developed in the framework of the Job Demands–Resources theory.[26] Originally, items in the OLBI were worded positively or negatively. Prior studies showed that these two types of items interfered with the measurement of burnout,[58,59] and a model that included negatively formulated sentences fit the data better.[60] Moreover, the OLBI can serve as a measurement of burnout and engagement (negative and positive indicators of well-being).[23] Because we wanted to test "pure" job burnout, defined both theoretically and semantically, we used only items that were negatively formulated.

Sentences were modified to reflect the specifics of daily study (for exhaustion, e.g. "Today, after my work, I felt worn out and weary" and disengagement, e.g. "Today, I thought less at work and did my job almost mechanically"). Each item was rated on a five-point scale from 1 (completely disagree) to 5 (completely agree). The sum of scores of the relevant items gives the intensity of each burnout component for every measurement day. Higher scores indicate higher exhaustion and disengagement

symptoms. In this study, omega for exhaustion and disengagement at the between-person level was 0.95 and 0.90, respectively, and at the within-person level 0.81 and 0.66.

Data Analysis

The random-intercept cross-lagged panel model (RI-CLPM, Figure 1)[56] is a special version of the well-known cross-lagged panel model.

It decomposes observed scores into a time-invariant between-person part ("trait-like") and a time-variant within-person part ("state-like"). As such it surpasses the classical cross-lagged panel model, especially when a considerable part of the construct is "trait-like" and time invariant. In that case, the autoregressive paths may not sufficiently account for this and as a result the model fails to adequately represent within-person processes.[56,61] In our case, there are 10 repeated measures of exhaustion (x) and disengagement (y). Based on structural equation modeling they can be presented as within-person latent factors (cx and cy) and a latent intercept factor (RI_x and RI_y) for each variable across all time points.[61] Thus, the between-person stability is "taken out" from the manifest indicators. As a result, through the cross-lagged relationships, variables affect each other at the within-person, state-like level only. Also, since at within-person level parameters are controlled for the trait-like differences their interpretation refers directly to intra-personal deviations from the expected person-specific scores. That is, the auto-regressive parameters (a and b) indicate a carry-over effect, how within-person deviations from expected scores on one day are related to the deviations for that variable the following day. The cross-lagged parameters show the extent to which the deviation in variable x on one day is related to the deviation in variable y the following day (A), controlling for auto-regression (b), that is, the previous deviation from a person-specific mean in variable y. The same-day correlation at day 1 reflects the association between deviations from the person-specific mean in x and deviations from the person-specific mean in y. However, for the following days, they are residual correlations indicating the correlated change, that is, the extent to which a within-person change in x is associated with a within-person change in y. Finally, a relationship between random intercepts reflects how stable between-person differences in x are linked with stable between-person differences in y.

To test this model, we used the most frequently reported goodness of fit index; specifically, an insignificant ($p > 0.05$) chi-square indicates a good fit. However, because of many shortcomings, this test is not considered conclusive for structural equation modeling.[62] Thus, other recommended indices were used with the following cut-off values: for the Tucker-Lewis index (TLI) and the Comparative Fit Index (CFI), values of at least 0.95; and root-mean-square error of approximation (RMSEA) values up to 0.08.[63]

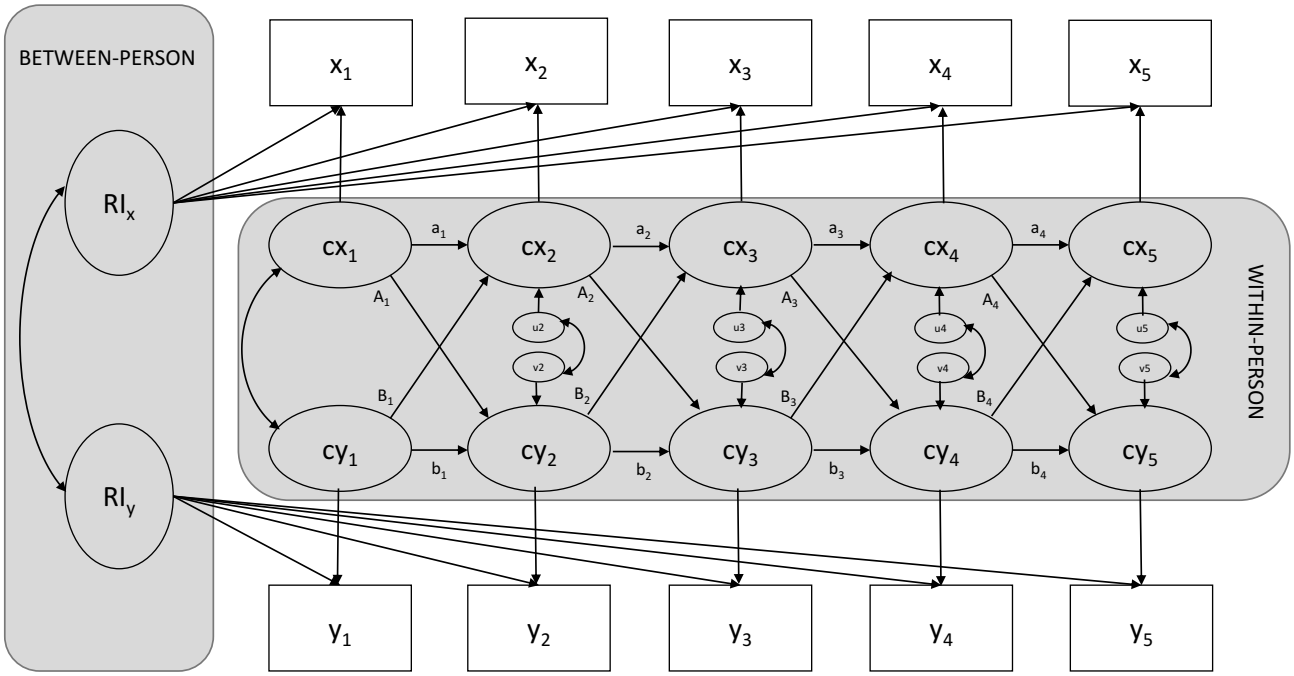

Figure 1 Random-intercept cross-lagged panel model for 5 measurement points (on the basis of Hamaker, Kuiper & Grasman, 2015). The explanation in the text.

We also checked whether there is a systematic growth in our sample, using multilevel modeling with random intercept and random slope. Because of the relatively short time of our study (two weeks), although we assume that participants may differ in terms of their starting point as well as the amount and direction of change, we do not expect any significant time trend for the whole sample.

For both these analyses, we used Mplus 8.2.[64] Specifically, the RI-CLPM model was parametrized as described by Hamaker (syntax provided)[61] using a wide data format, and a multilevel model was established with TWO-LEVEL RANDOM analysis using a long data format.

Results

Descriptive Statistics and Intra-Class Correlation (ICC)

Table 1 provides descriptive statistics for each measurement point and for aggregated data. The intra-class correlation was 0.41 for exhaustion and 0.45 for disengagement, suggesting that 41% and 45% of the variance is explained by between-person differences in burnout components and the remainder (59% and 55%, respectively) comes from within-person fluctuations.

Preliminary Analysis: Person and Time Effect

Table 2 represents the random intercept and slopes model for exhaustion and disengagement to check for possible systematic growth. A between-person variability in the level of these variables is observed, thus civil servants are heterogeneous in their burnout level. However, there is no time effect, thus during the time of the study neither average exhaustion nor disengagement level increased in the sample. Also, their baseline levels, despite the aforementioned interpersonal differences, do not correlate with the amount of change. The only time effect is noted for

Table 1 Descriptive Statistics (N = 235)

Variables	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Exhaustion: daily values from the 1st to the 10th day						
OLBI_E.1	9.37	3.97	4	19	0.33	−0.98
OLBI_E.2	9.29	3.82	4	20	0.43	−0.50
OLBI_E.3	9.59	3.71	4	20	0.29	−0.56
OLBI_E.4	9.33	3.88	4	20	0.44	−0.48
OLBI_E.5	9.24	4.01	4	20	0.38	−0.66
OLBI_E.6	9.24	4.15	4	20	0.47	−0.61
OLBI_E.7	9.47	4.01	4	20	0.22	−0.87
OLBI_E.8	9.50	3.79	4	20	0.24	−0.61
OLBI_E.9	9.51	3.86	4	18	0.26	−0.79
OLBI_E.10	9.74	3.88	4	20	0.12	−0.77
Disengagement: daily values from the 1st to the 10th day						
OLBI_D.1	8.39	3.21	4	18	0.49	−0.48
OLBI_D.2	8.45	3.19	4	20	0.81	0.82
OLBI_D.3	8.30	2.93	4	18	0.43	−0.19
OLBI_D.4	8.38	3.13	4	18	0.57	0.03
OLBI_D.5	8.41	3.10	4	20	0.39	−0.16
OLBI_D.6	8.41	3.35	4	19	0.59	0.07
OLBI_D.7	8.35	3.30	4	19	0.54	−0.17
OLBI_D.8	8.45	3.17	4	20	0.41	−0.22
OLBI_D.9	8.41	3.40	4	20	0.53	−0.13
OLBI_D.10	8.67	3.16	4	16	0.16	−0.88
Burnout indicators aggregated across 10 days						
Exhaustion	9.43	2.67	4	19	0.19	0.00
Disengagement	8.42	2.27	4	16	0.41	0.15

Abbreviations: E, exhaustion; D, disengagement.

Table 2 Exhaustion and Disengagement as a Function of Time (N = 235)

Effects	Exhaustion					Disengagement				
	Est.	SE	z	95% CI		Est.	SE	z	95% CI	
				Lower Bound	Upper Bound				Lower Bound	Upper Bound
Fixed effects										
Intercept	9.30	0.19	48.40*	8.92	9.82	8.34	0.17	50.04*	7.91	8.67
Time	0.03	0.02	1.3	−0.02	0.07	0.02	0.02	0.88	−0.02	0.06
Random effects										
Intercept	5.56	0.74	7.52*	4.11	7.02	4.70	0.67	7.01*	3.39	6.02
Time	0.01	0.01	1.06	−0.01	0.04	0.03	0.01	3.57*	0.02	0.05
Intercept and time	0.04	0.06	0.67	−0.08	0.16	−0.09	0.07	−1.29	−0.22	0.04
Residual	8.93	0.46	19.59*	8.04	5.12	5.29	0.27	19.47*	4.76	5.83

Note: * $p < 0.001$.
Abbreviations: Est., estimator; SE, standard error; 95% CI, 95% confidential interval.

disengagement, suggesting that people differ in their individual slopes.

Figure 2 illustrates regression lines for each person, together with red lines for an average person. As expected, the red lines show the overall stability of burnout during 10 days but it does not exclude within-person fluctuations over individual means.

Cross-Lagged Relationship Between Exhaustion and Disengagement

The resultant RI-CCLPM is presented in Figure 3. Although the chi-square test is significant, all other indices show a good to excellent model fit ($\chi^2(141) = 185.932$, p = 0.007; CFI = 0.987, TLI = 0.982, RMSEA =0.037, 95% CI [0.02, 0.05]). At the between-person level, there is a strong correlation between stable traits of exhaustion and disengagement (0.85, p <0.001). This shows that civil servants who reported higher exhaustion for all measurement days also reported higher disengagement.

After controlling for these traits, the within-person associations were rather small. For the lagged parameter estimates, there are two significant paths from exhaustion to disengagement and two in the opposite direction, in each case they are noted for different time lags. The only repeated relationship in terms of magnitude and weekdays is the one from Monday to Tuesday. This suggests that higher than typical for a given person disengagement on Monday is followed by an increase in exhaustion on Tuesday (0.22 and 0.21, p <0.001, in the first and second week, respectively). Moreover, higher exhaustion on Thursday leads to both higher exhaustion and higher disengagement on Friday. Interestingly, although the lag between Friday and Monday is three times as long, the similar effect is still significant. This must be interpreted with caution, but if at the end of week exhaustion is a result of higher previous day exhaustion, this effect may not only cross over the weekend but also result in higher disengagement on Monday. Finally, the general pattern seems to be that cross-lagged effects are observed only in coexistence with the relevant auto-regressive effects of explaining variable, and they have the same sign and similar magnitude (see first, fourth, fifth and sixth lag in Figure 3).

However, only seven of 18 possible auto-regressive parameters were significant, whereas all the residual correlations were positive, with values from 0.64 to.76. Thus, after controlling for traits, the day-by-day intra-individual inertia effect seems weaker than an innovation (= change) effect, suggesting an important role for external factors. Moreover, these factors seem to have similar effects on both components of burnout, since an increase in exhaustion is related to an increase in disengagement on the same day, and this relationship is controlled for the predictions from the observations on the previous day.

Discussion

Our findings showed that 41% of the variance in exhaustion and 45% of the variance in disengagement was explained by between-person differences and a rest came from within-person fluctuations. These results are consistent with studies that were conducted in less time, ie, for 4–5 consecutive workdays.[51,52,65,66] Most of those studies involved employees of the service sectors (teachers, social workers and health care personnel). In addition, their analyses were based on the

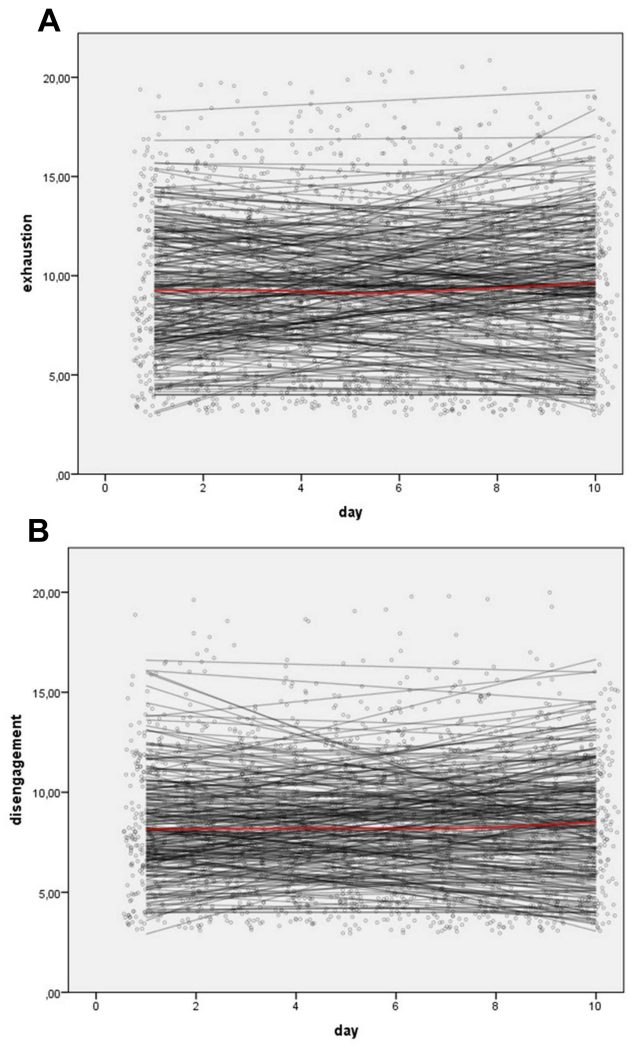

Figure 2 Estimates of fixed effects for exhaustion (**A**) and disengagement (**B**) during 10 consecutive workdays.
Abbreviations: Black lines, regression for each person together; Red lines, regression for an average person.

Maslach Burnout Inventory using burnout as a one-factor variable[65,66] or emotional exhaustion exclusively.[51] Similar to our study, only Derks & Bakker[52] used two components of burnout simultaneously in a heterogeneous group of employees. However, that study was based on Maslach's definition of job burnout.

As expected, the civil servants were heterogeneous in their burnout levels with substantial between-person variability in exhaustion and disengagement. This is consistent with the results from longitudinal studies. It means that employees presented levels of burnout that ranged from healthy to non-clinical burnout.[46] Additionally, there was a strong correlation between stable traits of exhaustion and disengagement. Interestingly, this corresponded to the within-person correlated change. It suggests that not only high exhaustion and high disengagement co-occur in our sample, but on a day the civil servant felt higher exhaustion, she or he also reported higher disengagement. It is agreement that for a majority of employees, consistent profiles of burnout syndrome occur, and atypical profiles are rarely found.[67,68] However, after controlling for trait-like components, in our study this consistency it is not due to a carry-over effect but rather to context-specific factors. It seems that the co-occurrence of exhaustion and disengagement is trait-like and state-like, but it is not carried over from one day to the next. Thus, inertia might not be a mechanism that explains the development of burnout. This surprising result requires further research.

There is no overall time effect. During the study, neither average exhaustion nor disengagement level increased or decreased. This may show that, for shorter times, burnout is relatively stable,[34] although for some people disengagement, not exhaustion, showed trends of change. Perhaps this group is the most prone to have further changes. According to the Job Demands–Resources theory[26] disengagement is related to both excessive demands and poor resources. It suggests that motivational process underlying burnout can be more interpersonally sensitive to changes and might be managed better by organizations. We also speculate that changes in the level of disengagement may be entangled in paradoxical effects.[69] Although people protect their resources and disengage from work, they may engage in organizational citizenship behaviors, for example, to increase social support. This means that disengaged employees on the one hand withdraw resources and reduce investments, but on the other they drive to seek and obtain other resources. In contrast, exhaustion can be more stable and show specific arousal patterns. Lower energy and higher tension require spending more effort to meet demands.[70] In future studies, it should be examined how daily unfavorable changes in resources can increase disengagement and withdrawal from work as it may cause exhaustion, not only be a response to it.

noted only a few repeated within-person cross-lagged relationships during weekdays. For example, at the beginning of the workweek, disengagement on the first day contributed to an increase of exhaustion on the next day. At the end of the workweek, exhaustion was an effect of higher previous-day exhaustion, and it may persist into the next workweek, leading to disengagement. Finally, the general pattern is that cross-lagged effects were observed only in coexistence with the relevant autoregressive effects of a causally dominant variable for a given lack. Thus, it

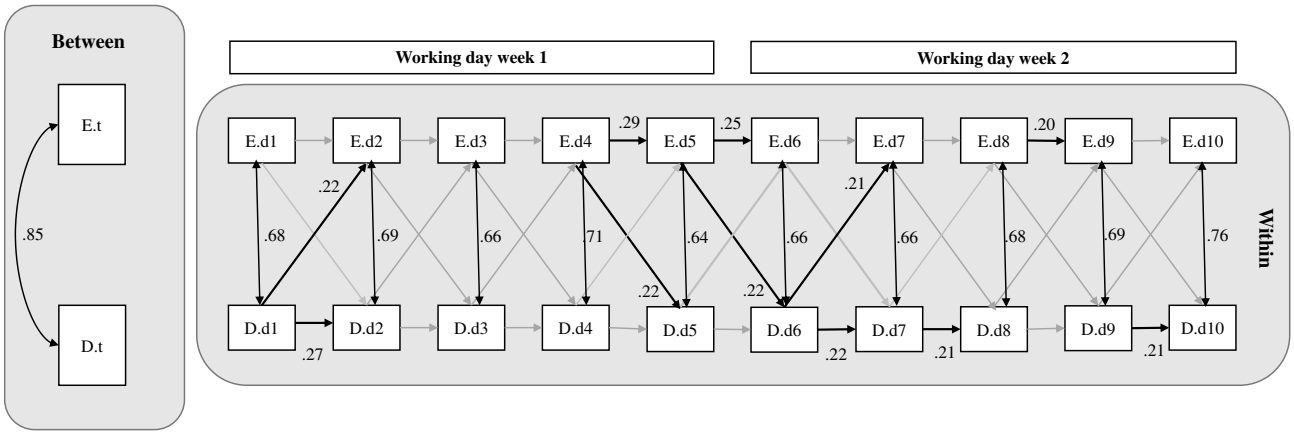

Figure 3 The simplified resultant random intercept cross-lagged panel model for exhaustion and disengagement in 10 consecutive workdays (Monday to Friday for two weeks).

Abbreviations: E.t and D.t, trait-like components of exhaustion and disengagement, respectively; E.d and D.d, state-like components of exhaustion and disengagement, respectively; numbers from 1 to 10, consecutive measurement points.

cannot be unequivocally stated that they were clear consequences of the reciprocal relationship between exhaustion and disengagement and vice versa, which differs from the results of longitudinal studies without separation of trait-like burnout.[40,69] This effect, therefore, seems more complex and needs further research, especially as it may not be the same pattern for the whole week, but rather some periods of the week may be more sensitive to different types of casual dominance and its persistence.

In addition, it is worth considering the time needed to detach from work. It is likely that exhaustion is more costly in terms of personal resources and needs more time for recovery. In our study, we observed that at the beginning of the workweek exhaustion was caused by pre-weekend exhaustion. This may suggest that individuals do not recover during free days and protect their resources by disengaging from work. However, because respondents assessed their symptoms of burnout when the workday was finished, the beneficial effect of the weekend could have already disappeared, especially if on Monday the workload and job demands were high.[71] It raises the question of how people burn out: is it an accumulative process (a continuous progression where after some point burnout becomes chronic) or a discontinuous stadial mechanism (a sequence of discrete, qualitatively distinct stages with burnout as the final one). This is an issue important from both theoretical and clinical perspectives.

Nonetheless, only about one-third of auto-regressive parameters were significant, and they were similar for the two burnout components, although never co-occurred for the same lag. Thus, after controlling for traits, the day-by-day intra-individual inertia effect seems weaker than the innovation effect. It suggests that external factors, such as job demands and job resources, could play an important role in daily burnout. The Job Demands–Resources theory shows a broad spectrum of demands that can deteriorate health (e.g., work overload) and others that can support well-being (e.g., responsibility).[72,73] More promising organizational resources appear to be associated with leaders' behaviors (or perception of leaders' styles) as well as the certainty of available resources.[74–76]

Limitations

Our study has some limitations. First, the sample was specific and consists predominantly of women. Because of model complexity, we decided not to include participant characteristics, since they were fairly homogenous. Also, the reliability of disengagement measurement at the within-person level was lower than for exhaustion Next, the lag from Friday to Monday was three times as long as for other lags in the model. This makes over weekend relationships only speculative, even if we did not notice any time trends for burnout during the time covered by our study. Thus, the results cannot be generalized, and since to our best knowledge, this is the first study using RI-CLPM in the context of burnout the findings should be treated as preliminary.

Practical Implications

The World Health Organization[16] is about to embark on the development of evidence-based guidelines for mental well-being in the workplace (see ICD-11). Because between-person variability in the levels of exhaustion

and disengagement existed, assessing the level of burnout is recommended as a part of monitoring psychosocial risks at work. Moreover, more precise workplace interventions could be developed to prevent burnout among healthy employees, to shape more friendly working conditions, and to improve the well-being of non-clinical burned-out employees. In addition, within-person fluctuations show that workplace stress could be managed more effectively. There is evidence that for job-related well-being, and especially its energy dimensions (exhaustion, fatigue, vitality), the immediate management of work breaks and relaxation during the workday is more beneficial than postponing such breaks.[50,52] Moreover, a significant role is attributed to detachment after work,[77] especially when a workday was exhausting. In a similar way, disengagement may be limited by daily motivational practices such as job crafting. Job crafting is a self-driven strategy to achieve better person–job fit during the workday; it facilitates employee selection and optimizing of their tasks and modifying their social environment. First, job crafting aimed at making employees' jobs more interesting rather than aimed at lowering their work pressure is more promising.[78] Moreover, the benefits can extend beyond work, thus allowing employees to experience greater meaning in life in general.[79] This underscores that practices to improve the well-being and fit between an employee and his or her organization could be provided by supervisors and human resource managers, as well as the occupational health service.[11,80]

Theoretical Contribution and Conclusion

This is one of the first studies to focus on burnout understood as a between- and within-person phenomenon at the same time. Particularly, examining within-person day-by-day relationships between exhaustion and disengagement revealed that this process may be more prone to the situational context than driven by the carryover effect. Whether it is a random or sample-specific result, or whether it is logically linked to changes in work-related resources and demands, requires further research.

Data Sharing Statement

The data used to support the findings of our study are available from corresponding author upon request.

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Disclosure

The authors declare that there is no conflicts of interest regarding the publication of this paper.

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