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BURNOUT AND WELL-BEING: THE CONSEQUENCES OF LONG-TERM WORK-RELATED STRESS FOR MENTAL HEALTH¹

Abstract

Burnout as a multidimensional syndrome refers to deterioration in well-being and mental health. We analyse current research to describe the diverse consequences of long-term work-related stress which are observed in self-reported, behavioural and neuroimaging findings. Most studies report significant differences between burnout and controls and emphasize the cognitive impairments and emotional deteriorations in burnout. The presented study introduces two independent burnout measures: (N = 100) *Maslach Burnout Inventory-General Survey* (MBI-GS) and *Link Burnout Questionnaire* (LBQ). A mood scale (N = 63) *Activation-Deactivation Adjective Check List* (AD ACL) is also introduced. The results confirm significant differences between burnout and control subjects. The burnout profile is characterized by higher levels of exhaustion, cynicism/deterioration in relations, ineffectiveness, and general disappointment. The burnout group reveals lower energy levels and higher levels of tension. The significance of burnout problems is supported by the results of the *Beck Depression Inventory*: in the studied non-clinical burnout sample, depressive symptoms are significantly higher and indicate mild mood disturbances among burnout subjects.

Keywords: burnout, mental health, depression, MBI-GS, LBQ, AD-ACL

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Wypalenie zawodowe a poczucie dobrostanu: konsekwencje chronicznego stresu zawodowego dla zdrowia psychicznego

Streszczenie

Wypalenie zawodowe to wielowymiarowy syndrom, który odnosi się do obniżonego poczucia dobrostanu i pogorszenia stanu zdrowia psychicznego. W artykule przedstawiamy analizę bieżącego stanu badań. Opisujemy różnorakie konsekwencje przewlekłego stresu zawodowego, manifestowane na poziomie deklaratywnym, behawioralnym, a także jako zmiany widoczne w danych neuroobrazowych. Większość badań wskazuje na istotne różnice pomiędzy grupą osób wypalonych zawodowo a grupą kontrolną, podkreślając problemy w poznawczo-emocjonalnej sferze funkcjonowania osób wypalonych zawodowo. W prezentowanym badaniu (N = 100) wykorzystane zostały dwa niezależne narzędzia do pomiaru wypalenia zawodowego: *Maslach Burnout Inventory-General Survey* (MBI-GS) oraz *Link Burnout Questionnaire* (LBQ). Ponadto wykorzystano skalę symptomów depresyjnych *Beck Depression Inventory* (BDI) i skalę do pomiaru nastroju *Activation-Deactivation Adjective Check List* (AD-ACL). Prezentowane wyniki potwierdzają istnienie istotnych różnic pomiędzy grupą osób wypalonych zawodowo a grupą kontrolną. Profil osób wypalonych zawodowo charakteryzuje wyższy poziom zmęczenia, cynizmu, nieefektywności i ogólnego rozczarowania. U osób wypalonych zaobserwowano również niższy poziom energii oraz wyższy poziom napięcia niż w grupie kontrolnej. Znaczenie problemu wypalenia zawodowego wspierają wyniki uzyskane w skali BDI – w badanej nieklinicznej próbie osób wypalonych zawodowo obserwuje się znacząco wyższy poziom symptomów depresyjnych, co może świadczyć o umiarkowanych zaburzeniach nastroju.

Słowa kluczowe: wypalenie zawodowe, zdrowie psychiczne, depresja, MBI-GS, LBQ, AD-ACL

1. Introduction

In our study, we approach the problem of burnout as a multidimensional, self-reported syndrome that is also a facet of low well-being. The aim of the study is to characterize the profile of burnout and non-burnout groups in different aspects of mental health and well-being. First, the typical symptoms of burnout are analysed: state of exhaustion, cynicism, deterioration in relations, self-efficacy/ineffectiveness and general disappointment. Secondly, we analyse aspects of emotional functioning that relate to mood and activation level. Contrary to complex disorders, self-reported measures of energy and activation are deeply rooted in many psychophysiological contexts. Therefore, we chose to check for a relationship between burnout and activation level. The study was conducted on a non-clinical burnout group consisting of active and healthy subjects. The analysis of study results is preceded by a review of self-reported, behavioural and neuroimaging research on the consequences of burnout.

Burnout is a contemporary challenge for mental health. World Health Organization (2001) defines mental health as a lack of mental illness with a simultaneous

feeling of well-being. Various factors coincide in well-being: "Concepts of mental health include subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence, and self-actualization of one's intellectual and emotional potential, among others." (World Health Organization, 2001: 5)

What causes burnout and what are the potential threats to personal well-being? There are some common factors that fall within two main areas. Firstly, job-related burnout syndrome is induced by negative environmental factors. An overwhelming workload, lack of control, poor rewards, mismatch in values and injustice: all lead to prolonged stress response and exhaustion of personal resources (Leiter, Maslach, 2001). Well-being, engagement, vigour and efficacy relies on the employee-company match (Leiter, Maslach, 2001). Prolonged stress response to job-related factors may be described as a "harmful work environment" and increases the likelihood of burnout syndrome (Maslach, Schaufeli, Leiter, 2001).

Secondly, we deal with individual factors. Research shows that the risk group contains employees with higher than average or a very high degree of neuroticism (Alarcon, Eschleman, Bowling, 2009). They more often describe themselves as being vulnerable, with low self-esteem, external locus of control, and high level of avoidance (Semmer, 1996). Regarding demographical metrics, we find that the majority of burnt-out employees are single-men under 30 years of age who received higher education (Maslach, Schaufeli, Leiter, 2001; Thomas, 2004; West, Shanafelt, Kolars, 2011).

Acting in emotionally-demanding situations becomes highly problematic to exhausted individuals. In order to deal with emotional impact, they try to hold themselves uninvolved in interpersonal relations. Such an attitude is called de-personalisation or cynicism (often used interchangeably). Furthermore, feelings of self-efficacy, which are so crucial to both well-being and a positive attitude toward work, are challenged in burnout (Maslach, Schaufeli, Leiter, 2001; Leiter, Maslach, 2001).

According to Gibson et al. (2003), exhaustion-linked syndromes have more in common with complex emotions than with states. For instance, the term "emotion" in a common sense better expresses the sense of "feeling energetic or tired," instead of "being rested or tired." When we are feeling tired, the readiness to face new challenges vanishes, which affects our interpersonal relations. In this context, a state of fatigue or exhaustion is not a simple lack of energy. Burnout subjects who experience fatigue not only have a reduced level of activation, they also feel fatigued, and this state influences their regulatory mechanisms. Thus, it is especially interesting to also explore the elementary dimensions of emotional state in burnout by referring to arousal or activation levels. This would provide a basis for describing the underlying mechanisms of complex emotions, such as feelings of exhaustion and cynicism and the sense of a lack of efficacy.

2. Consequences of burnout: from self-reported measures to neuroimaging studies

Burnout studies relate to different research areas of antecedents and complex consequences of burnout. An important field that has developed intensively in recent years relates to cognitive studies. Most studies on burnout are based on self-reporting and behavioural measures, but there is a growing body of research using psychophysiological and neuroimaging tools.

2.1. Self-report and behavioural studies on burnout

The growing body of research has proved that burnout is an important risk factor for physical diseases and mental disorders (Shirom et al., 2005). Employees with higher levels of burnout are more likely to report a range of psychological and physical health problems, including self-reported anxiety, depression, sleep disturbance, memory impairment, musculoskeletal disorders (Peterson et al., 2008), and cardiovascular diseases (Ahola et al., 2010). Hakanen and Schaufeli (2012) found a positive relationship between burnout and both depressive symptoms and life dissatisfaction. Similarly, Ahola et al. (2010) reported an increased prevalence of depressive and anxiety disorders and alcohol dependence among burned-out individuals. Kim and Kao (2011) reported that employees with higher burnout reported more physical health complaints over the course of their three-year study, including sleep disturbances, headaches, respiratory infections, and gastrointestinal infections. Finally, Bakker (2009) suggested that burnout not only impacts employees' health, but also other people's health as it can transfer between partners, affecting their psychological health. Consequently, burnout employees are likely to display behaviours such as absence, high turnover rate, or reduced job performance (Bakker, Costa, 2014).

Reduced job performance is one of the main features of the burnout syndrome, but surprisingly few studies have investigated the relationship between severity of burnout and actual job performance (for a review see Taris, 2006). One factor that determines job performance is cognitive functioning. Previous clinical observations have suggested that burned out individuals often complain about cognitive problems in daily tasks (Maslach, Schaufeli, Leiter, 2001). Such complaints, which were measured by self-reported cognitive failures, proved to be associated with objective measures of cognitive deficits examined in controlled laboratory settings. More precisely, Linden et al. (2005) used a questionnaire assessing the level of self-reported attentional difficulties in daily life and compared this against performance on tasks of sustained attention and response inhibition. It was found that severity of burnout symptoms was significantly related to the number of self-reported cognitive failures in daily life, and to inhibition errors and performance variability in attentional tasks.

On the other hand, Sandström et al. (2005) examined general cognitive ability, memory and attention in burnout subjects with standardized tests of verbal and

nonverbal cognitive ability, verbal and nonverbal memory, and visual and auditory attention. The authors observed a significant decrease in nonverbal memory and auditory and visual attention in burnout individuals, compared to healthy control subjects.

Oosterholt et al. (2014) conducted research examining cognitive performance in both clinical and non-clinical burnout groups in comparison with a healthy control group. These 3 groups were compared on self-reported cognitive problems (assessed by a questionnaire) as well as on cognitive test performance (assessed with a cognitive test battery measuring both executive functioning and more general cognitive processing). Additionally, self-reported fatigue, motivation, effort and demands were assessed to compare the analysed groups in terms of the subjective costs related to cognitive test performance. The results showed that the severity of burnout syndrome was related to self-reported cognitive problems. Impaired cognitive test performance was only found in the clinical burnout patients, who manifested slower reaction times than the healthy controls. Although both the clinical and non-clinical burnout groups reported cognitive problems; higher reported subjective cost related to cognitive test performance was only found for the clinical burnout group.

Finally, the systematic review provided by Deligkaris et al. (2014) showed that burnout is associated with a decline in three main cognitive functions: executive functions, attention and memory (assessed with a wide variety of cognitive test batteries).

All these results indicate that burnout individuals have specific physical, psychological and cognitive problems which should be focused on in the diagnosis of burnout symptoms.

2.2. Neuroimaging studies on burnout

There is a growing body of neuroimaging studies that explores the mechanisms of impairments in burnout. Durning et al. (2013) measured general brain activity during cognitive tasks and linked it to the results of subjective assessment of burnout. Their research subjects were physicians who ranged in professional experience from resident doctors to specialists. Compared to controls, differences in activation patterns were revealed to be significant only for the group of residents. This aligns with previous findings that burnout is a syndrome found in young groups (Maslach, Schaufeli, Leiter, 2001; Thomas, 2004; West, Shanafelt, Kolars, 2011). Furthermore, the study revealed cognitive impairments in burnout subjects: self-reported depersonalisation co-occurred with weaker blood-oxygen-level dependent (BOLD) signals within several structures. For instance, decreased activation in the right dorsolateral prefrontal cortex, which is involved in working memory, is believed to be an effect of stress. Moreover, burnout was linked to emotion perception: reduced signals were found in the middle prefrontal gyrus, which is sensitive to unpleasant visual stimuli.

Burnout is associated with disruption in emotional regulation. Tei et al. (2014) observed reduced activity in empathy-related brain areas in burnout subjects. This decrease correlated with stronger emotional dissonance and alexithymia scores and, interestingly, with higher empathic disposition.

Golkar et al. (2014) observed that burnout subjects experience problems in reducing negative arousal. The ability to control and cope with negative emotions is associated with stronger activation in the functional network between the right amygdala and the anterior cingulate cortex. Burnout subjects reveal a weaker obtained signal between these brain areas, which implies difficulties in coping with negative emotions. In response to stressful events, they tend to overreact emotionally and become especially sensitive to emotionally demanding situations.

Moreover, structural scanning showed that the brains of burnout subjects are different than those of healthy subjects. Anatomical scans suggest that the brains of burnout subjects are similar to those of subjects who have experienced chronic stress (Savic, 2015). Savic examined 80 people (40 with burnout symptoms measured with MBI). The results of a subjective burnout assessment were compared to structural data. The subjective feeling of job-related stress is related to increased amygdala size and reduced size of the caudate nucleus, both of which are involved in cognitive-emotional regulation. Savic (2015) also observed in burnout patients cortical thickening of the medial prefrontal cortex, which is crucial to cognitive functioning. A similar pattern occurs as part of the normal aging process. Burnout subjects' brains are characterized by pronounced thickening in the medial prefrontal cortex and noticeable effects of aging.

The available EEG findings suggest that there might also be electrophysiological correlates of burnout. In one of the first EEG studies on burnout, van Luitelaar et al. (2010) showed lower alpha peak frequency and reduced beta power in burnout participants. Sokka et al. (2014) analysed automatic speech sound discrimination and involuntary attention allocation in a burnout group without severe depressive or anxiety disorders. They found that speech sound stimuli evoke different responses between burnout and control groups in one component of event related potential (ERP) that refers to involuntary shift of attention. This shift was faster in a burnout group when responding to negative information, and slower when responding to positive information. In other research, Sokka et al. (2017) studied relations between burnout and cognitive functions using a switch task and concluded that in severe burnout the ability to rapidly shift attention between tasks is impaired. Compared to mild burnout and control groups, higher error rates after task switching were observed in a severe burnout group; however, in simple repetition task there was no difference between groups. This inadequate switching between different contexts is indexed by a decreased parietal ERP component which appears approximately 300 ms after the stimulus onset and has a positive amplitude (it is indexed by P3). In each group, task switching caused an increase in this ERP component compared to a repetition task, but the severe burnout group exhibited the weakest response.

Sokka et al. (2017) indicated reduced P3 responses in burnout individuals; this suggests they had problems processing novel and potentially important events and a deterioration in working-memory.

Considering the aforementioned studies on cognitive and emotional functioning in burnout, it may be assumed that long-term work-related stress is associated with significant and noticeable consequences that influence psychological well-being. Our study is dedicated to the burnout problem among non-clinical active employees. We analyse typical burnout symptoms and arousal states, including energetic and tense arousal. The aim of the presented study is to find out if there are different and distinctive profiles for burnout and controls in both complex burnout symptoms and simple characteristics of arousal states.

3. Material and methods

3.1. Methods

We used two independent scales to measure job-related burnout syndrome and depict typical burnout symptoms. One is the most popular questionnaire amongst burnout measuring scales: the *Maslach Burnout Inventory-General Survey* (MBI-GS) (Maslach, Jackson, Leiter, 1996; Mojsa, Dyląg, Pałczyńska, 2006). It consists of 16 items (the answers are given on a 7-point scale referring to frequency of symptoms: 0 – never; 6 – always) and three subscales: exhaustion, cynicism and self-efficacy. The other is a recent questionnaire, the *Link Burnout Questionnaire* (LBQ) which consists of 24 items (the answers are given on a 6-point scale: 0 – never; 5 – every day) and assesses burnout on four dimensions: psychophysiological exhaustion, deterioration in relations with clients, lack of self-efficacy, and disappointment (Jaworowska, 2014; Santinello, 2014).

To depict simple characteristics of arousal states we used the *Activation-Deactivation Adjective Checklist* (AD ACL) (Klonowicz, 1984; Thayer, 1986). It consists of four subscales: energy, tiredness, tension and calmness. AD ACL refers to subjective mood evaluation: one dimension is associated with motor and cognitive arousal (energy-tiredness) and the other refers to emotional arousal (tension-calmness).

Additionally, to rate depressive symptoms the *Beck Depression Inventory* (BDI) (Beck, Steer, Brown, 1996) was used.

3.2. Participants

100 participants (60 females) ranging in age from 25 to 55 ($M = 36.03$, $SD = 8.06$) were selected for the study after completing an MBI-GS. Participants were active workers, did not work night shifts, did not suffer from any neurological disorders, and were not addicted to psychoactive substances.

Subsequently, subjects were divided into two groups, based on MBI-GS scores: 50 participants (30 females; $M(\text{age}) = 37.22$, $SD = 7.62$) with present burnout symptoms, with values higher than the average obtained in at least two of the subscales (reverse values for self-efficacy scale); and 50 participants (30 females; $M(\text{age}) = 34.84$, $SD = 8.39$) without burnout symptoms reported on either scale. In the second stage of the study, all participants were interviewed in order to describe their work environment. They then completed an LBQ questionnaire ($N = 100$) and AD ACL ($N = 63$). Samples were demographically matched by age, gender, and educational level.

Participants were paid in return for their participation. Written informed consent was obtained from all participants prior to the study. The study was approved by the Bioethics Commission at Jagiellonian University.

3.3. Results

The mean values for the two burnout measures are presented in Table 1. Burnout and control groups are significantly differentiated in all subscales of MBI-GS and LBQ. Burnout subjects feel more exhausted, cynical, ineffective and generally more disappointed.

Table 1. Average values of MBI-GS and LBQ results in the burnout and control group (standard deviation values noted in parentheses) and independent-sample t-test between burnout and controls

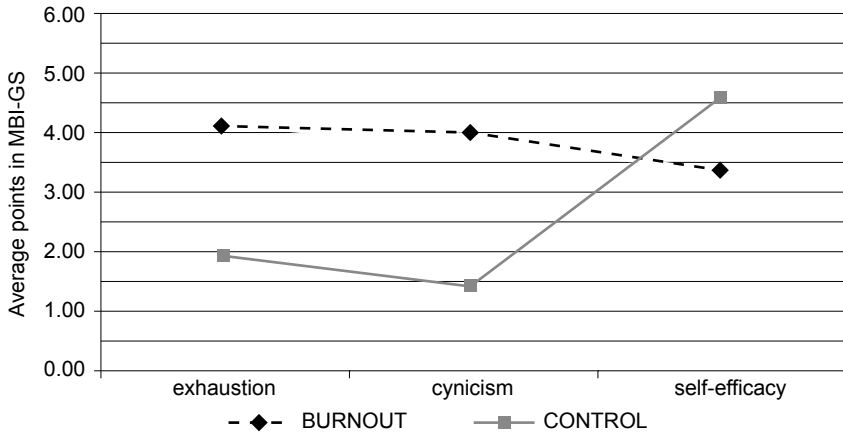
	BURNOUT (N = 50)	CONTROL (N = 50)	<i>t-value</i> (<i>df</i> = 98)
MBI-GS			
exhaustion	4.12 (0.99)	1.93 (0.74)	-12.56***
cynicism	3.99 (0.89)	1.46 (0.66)	-16.07***
self-efficacy	3.37 (1.12)	4.59 (0.62)	6.75***
LBQ			
psychophysical exhaustion	4.23 (0.91)	2.68 (0.75)	-9.59***
deterioration of relations with clients	3.50 (0.83)	2.67 (0.60)	-5.79***
job ineffectiveness	2.82 (0.80)	1.90 (0.42)	-7.11***
disappointment	4.25 (0.96)	2.42 (0.89)	-9.93***

Note: *** $p < 0.001$

Source: own work.

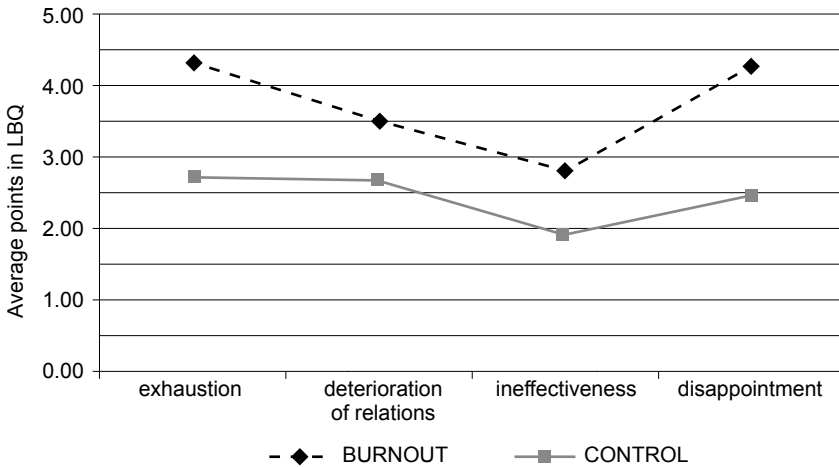
Two independent burnout measures revealed significantly different profiles for burnout and control groups (Figure 1 and 2).

Figure 1. The profile groups based on burnout dimension scores measured with MBI-GS: exhaustion, cynicism and self-efficacy



Source: own work.

Figure 2. The profile groups based on burnout dimension scores measured with LBQ: exhaustion, deterioration of relations with clients, ineffectiveness and disappointment



Source: own work.

Both burnout measures show significant correlations between all subscales. The expected highest correlation coefficients between *exhaustion* subscales from MBI-GS and LBQ and between *self-efficacy* (MBI-GS) and *ineffectiveness* (LBQ) are observed. *Cynicism* (MBI-GS) and *deteriorations of relations* (LBQ) correlate

moderately but refer to different aspects of interpersonal relations: *cynicism* refers to a more general attitude, while *deteriorations of relations* concentrates mainly on relations with clients. The strongest associations are with general *disappointment*, which correlate highly with all MBI-GS subscales, especially with *cynicism* and *exhaustion* (Table 2).

Table 2. Pearson correlation coefficients (*r*) between subscales of MBI-GS and LBQ

	LBQ	exhaustion	deterioration of relations	ineffectiveness	disappointment
MBI-GS					
exhaustion		0.78***	0.57***	0.59***	0.72***
cynicism		0.63***	0.52***	0.55***	0.79***
self-efficacy		-0.50***	-0.41***	-0.61***	-0.60***

Note: *** $p < 0.001$

Source: own work.

The results of the AD ACL activation scale reveal significant differences between burnout and control groups in two aspects: level of *energy* and *tension* (Table 3).

Table 3. Average values of AD ACL and BDI results in the burnout and control groups (standard deviation values noted in parentheses) and independent-sample t-test between burnout and controls

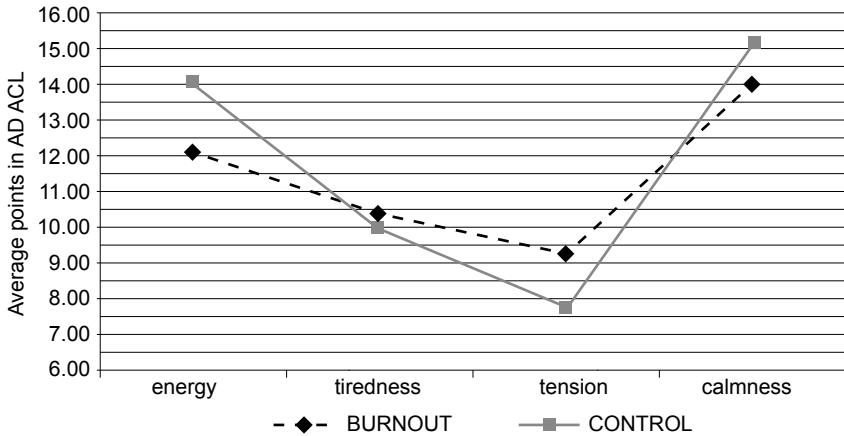
	BURNOUT (N = 32)	CONTROL (N = 31)	<i>t-value</i> (<i>df</i> = 61)
ADACL			
energy	12.13 (2.62)	14.03 (2.23)	-3.10**
tiredness	10.34 (2.22)	9.97 (2.30)	0.66 ns.
tension	9.22 (3.03)	7.68 (2.01)	2.37*
calmness	14.06 (2.58)	15.10 (1.72)	-1.87 ns.
BDI			
depression	15.78 (7.53)	4.42 (4.59)	7.08***

Note: * $p < 0.05$; ** $p < 0.005$; *** $p < 0.001$

Source: own work.

The burnout group shows less energy and more tension than controls. The levels of *tiredness* and *calmness* do not differentiate the studied groups (Figure 3).

Figure 3. The profile groups based on AD ACL scores: energy, tiredness, tension and calmness



Source: own work.

The correlations between mood and burnout scales show a significant relationship between the level of energy and all burnout subscales in two independent measures. The highest, albeit moderate, negative coefficients are observed between energy and exhaustion, general disappointment, and cynicism. Tension correlates moderately with exhaustion and job ineffectiveness, a higher level of tension is associated with greater exhaustion and job ineffectiveness (Table 4).

Table 4. Pearson correlation coefficients (*r*) between subscales of AD ACL and two burnout measures: MBI-GS and LBQ

	AD ACL			
	energy	tiredness	tension	calmness
MBI				
exhaustion	-0.46***	0.16	0.37**	-0.19
cynicism	-0.40**	0.17	0.20	-0.04
self-efficacy	0.32*	-0.18	-0.23	0.05
LBQ				
psychophysical exhaustion	-0.49***	0.13	0.24	0.00
deterioration of relations	-0.30*	-0.04	0.29*	-0.13
job ineffectiveness	-0.26*	0.08	0.31*	-0.14
disappointment	-0.46***	0.14	0.24	-0.06

Note: * $p < 0.05$; ** $p < 0.005$; *** $p < 0.001$

Source: own work.

4. Discussion and conclusions

The presented results of non-clinical and active employees reveal significant differences between the burnout and control groups. The differences were observable in each burnout dimension as well as in relation to arousal states. Burnout subjects are more exhausted, uninvolved in interpersonal relations at work, and feel lower self-efficacy. They are more disappointed and have lower existential expectations. Moreover, burnout subjects feel significantly lower energy and higher tension, which implies that less resources are available for potential activity and coping with stress.

Chronic stress resulting from a negative work environment is associated with deterioration in psychological well-being, which may further diminish employees' mental health. Research indicates that burnout is correlated with numerous self-reported measures of personal distress including depression and anxiety (Schaufeli, Greenglass, 2001), and cognitive (Linden et al., 2005) as well as somatic complaints and problems (Shirom et al., 2005). Some research has even argued that burnout is not only related to diminished physical and mental health, but is itself a form of mental dysfunction (Schaufeli, Greenglass, 2001).

Individual characteristics such as coping resources, internal locus of control, self-efficacy, balance between work and personal life, and a wide variety of social support (Emery, Wade, McLean, 2009; Gray-Stanley, Muramatsu, 2011) may reduce the risk or level of burnout. Therefore, to understand the role of personal resources it is important to provide help to individuals to strengthen crucial skills and prevent them from this stress-related syndrome and the associated negative consequences reflected in mental health.

The outcomes from the aforementioned studies and presented burnout profiles show diverse aspects of cognitive and emotional consequences of long-term work-related stress. Reduced psychological well-being seems to be an inherent manifestation of burnout, even if performance levels and general professional functioning are maintained. A lower energy level is symptomatic of burnout and may be an important indicator in the subjective assessment of employees' well-being. Regarding the processual character and increasing consequences of burnout, it is highly important to respond to the first symptoms. As work environment and individual traits are important sources of burnout, the opportunities for corrective action are broad and might include environmental change and the development of social support and individual resources. However, the fundamental issue is to not ignore or underestimate burnout symptoms.

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