Predictors of employees’ psychophysical health and sickness absenteeism: Modelling based on REBT framework

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The main objective of the study was to examine whether negative experiences at work, irrational beliefs, alone and in interaction, and negative affectivity as a mediator, could predict psychosomatic complaints and frequency of sickness absenteeism. The hypothesized model showed acceptable fit to the data, suggesting that negative affectivity mediates the relationship between negative experiences and irrational beliefs on the one hand, and psychosomatic complaints on the other. The results also revealed no significant effect of interaction between negative experiences and irrational beliefs, while fatigue and physical symptoms have a significant and direct effect on the number of days of absence. It was concluded that the lack of an effect of psychological symptoms on absenteeism may indicate that employees in Serbia do not see them as a sufficient reason for sick leave. The results are discussed within frameworks of Rational-emotive behaviour therapy and strategic stress management approach.

Keywords: psychophysical health, sickness absenteeism, REBT, irrational beliefs, mediated moderation

The negative effects of sickness absenteeism on organisational performance are widely known and documented. The costs of sickness absence are very high in all industries. In UK industry, for example, these costs are also high, with estimates range from £8.4 to £12 billion a year, depending on the source (see Sainsbury Centre for Mental Health, 2007). According to the annual report of the Swedish Social Insurance Agency, the total costs to the social security system of absence from work were close to SEK 108 billion in 2008 (£11.28 billion as at 3 June 2010; Häggebrink & Lovén, 2010). According to Sainsbury Centre for Mental Health (2007), psychological health problems represent a substantial factor, comprising around 40% of all losses due to sickness absence.

Neighbouring countries are also making efforts to track the causes, rates and consequences of absenteeism. Research in Croatia has shown that absenteeism
is more frequent in the manufacturing sector, in medium-sized companies and in state-owned companies (Pološki Vokić, & Frajlić, 2004). The statistical indicators show that in three-quarters of Croatian organisations the absenteeism rate does not exceed 10%, regardless of the sector. This suggests an acceptable rate of absenteeism from the workplace, but this should be taken with a certain amount of caution, bearing in mind that the data were collected more than ten years ago. Research conducted by the Slovenian Health Insurance Institute has shown that temporary employee absence from work is a major burden to employers, and that the number of such cases is far greater in comparison to the incidence of illness and injury outside work time (Vučković, 2010). More accurate reports from Slovenia published in 2008 and 2009 show that the average absence due to sickness is 12 days annually. By way of comparison, this figure is 4.5 days in the European Union countries. Hence the problem of absenteeism in the country has a major effect on organisations in terms of increased operating costs and lost employee productivity (Meško et al., 2013).

Despite the importance of this topic both for employees and companies, in Serbia there are no precise figures on sickness absenteeism rates or costs.

Predictors of sickness absence

A huge number of studies have explored predictors of sickness absence to date (e.g., Bansback et al., 2012; Borritz, Rugulies, Christensen, Villadsen, & Kristensen, 2006; Donders, Bos, Velden, & Gulden, 2012; Duijts, Kant, Swaen, van den Brandt, & Zeegers, 2007; Eriksen, Bruusgaard, & Knardahl, 2003; Janssen, Kant, Swaen, Janssen, & Schröer, 2003; Nasermoaddeli, Sekine, Hamanishi, & Kagamimori, 2003; Niedhammer, Chastang, Sultan-Taieb, Vermeylen, & Parent-Thirion, 2013; Peterson et al., 2011; Sabbath, Melchior, Goldberg, Zins, & Berkman, 2012; Sivertsen, Øverland, Bjorvatn, Mæland, & Myklebust, 2009; Thorsen, Burr, Diderichsen, & Bjørner, 2013; Vahtera, Pentti, & Uutela, 1996) using different frameworks and theoretical backgrounds (Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Schaufeli, Bakker, & Van Rhenen, 2009). However, in this research, employee well-being indicators (such as poor health, burnout or fatigue) have proven to be the strongest predictors of both the number of spells and the duration of sickness absence. For example, Duijts and her collaborators (Duijts et al., 2007) have shown in their large meta-analytic study that higher sick-leave rates were recorded among employees with unmarried status, experiencing psychosomatic complaints, using medication, having a burnout, having psychological problems, having low job control, having low decision latitude, and experiencing a lack of fairness at work. Another longitudinal study conducted in the Job Demands-Resources framework (Schaufeli et al., 2009) have shown that burnout (positively) and work engagement (negatively) predicted registered sickness duration and frequency. Good health, as well as job satisfaction and good work ability, have been shown to reduce risk of sick leave in a recent cohort study of civil servants in Finland (Kuoppala, Lamminpää, Väänänen-Tomppo, & Hinkka, 2011). The
vast majority of results have shown that both organisational/work (such as high workload, bullying or unfairness at work) and individual characteristics (such as sense of coherence, negative affectivity, etc.) have their impact on sickness absence (Duijts et al., 2007).

**Negative affectivity, irrational beliefs and occupational stress**

Negative affectivity (NA) is usually defined as a relatively stable predisposition towards experiencing low self-esteem and negative emotional states, leading to a pessimistic view of the world (Watson & Clark, 1984). Traditionally, it is believed that in comparison with people with low NA, those with high NA display a greater level of distress both in objectively stressful situations and those less stressful. The possible intervening role played by NA in the stress-coping process was pointed out several decades ago (Spielberger, Gorsuch, & Luchene, 1970). From today’s perspective, there is agreement amongst researchers in this area that the role of NA in this process is rather complex (Cooper, Dewe, & O’Driscoll, 2001).

Accordingly, a number of possible explanations have been offered of the role NA plays in the stress process. Thus, for example, it is thought that people with high NA are generally predisposed towards perceiving a greater number of stressors in their environment, as well as being more sensitive towards existing stressors in comparison with those with a low level of NA (see Spector, Zapf, Chen, & Frese, 2000). However, a considerable number of researchers have tested these mechanisms and, for example, Höge & Büssing (2004) found that stressors at work influenced stress both directly and indirectly via NA. Schaubroeck & Jones (2000) suggest that emotional labour, or more precisely the requirement not to display negative emotions in the workplace, has a damaging impact on employees with high NA, since they have to invest significant effort in suppressing frequent negative feelings.

According to the REBT theory, unhealthy emotions (i.e. dysfunctional emotional responses), which need not to be clinically significant, are the consequence of irrational beliefs about negative events to which the person is exposed (Marić, 2000). Under stress conditions, irrational beliefs act as cognitive vulnerability factors, while rational beliefs play a protective role, contributing to the development of emotional resilience (Gavita & Duta, 2013). This is backed up by empirical findings which support the hypothetical relationship between (ir)rational beliefs and (dys)functional, clinically relevant emotions (Popov & Novović, 2007; Tovilović, 2004) and behavioural patterns (e.g. procrastination – Bridges & Roig, 1997; performance of various tasks – Kombos, Fournet, & Estes, 1989; social skills – Monti, Zwick, & Warzak, 1986). In addition it has been determined that irrational beliefs are connected with psychosomatic disorders, and that REBT intervention can reduce various stress indicators (David, Szentagotai, Eva, & Macavei, 2005; Gardner, Rose, Mason, Tyler, & Cushway, 2005; Richardson & Rothstein, 2008; van der Klink, Blonk, Schene, & van Dijk, 2001) and act positively in the prevention of long-term disability.
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However, the number of researchers who have specifically tested the premises of REBT in the context of work stress is still small (Bond & Bunce, 2003; Bond, Flaxman, & Bunce, 2008; Popov & Popov, 2013). Moreover, to the best of our knowledge there have been very few studies that have tested the incremental validity of the use of irrational beliefs in predicting mental health indicators and sickness absence in addition to established constructs such as personality traits or coping strategies. For example, Spörrle, Strobel, and Tumasjan (2010) have shown that when the effects of the personality traits from the Big Five model are controlled, irrational beliefs predict satisfaction with life to a statistically significant extent, but not happiness. Popov & Popov (2013) have found a significant role played by irrational beliefs in the prediction of stress and burnout in the workplace in addition to coping strategies, as compared to the interaction of stressors and irrational beliefs, which was not found to be statistically significant.

To sum up, previous studies have not solved the dilemma of whether the REBT diathesis-stress model, which postulates that certain beliefs constitute a vulnerability to emotional disorders, has explanatory power in predicting mental and physical ill-health and sickness absenteeism. Additionally, it is unclear whether irrational beliefs, alone or in interaction with adverse experiences at work have incremental validity above negative affectivity in predicting the abovementioned well-being indicators. Finally, even though there is a plethora of studies on sickness absence, it is still not clear which specific dimensions of mental and physical ill-health are its best predictors.

**Negative experiences and occupational stress**

As mentioned, when investigating the phenomenon of employee absenteeism, in addition to the aforementioned individual characteristics (such as negative affect and the presence of irrational beliefs) we need to take into account the characteristics of the organisation and negative events derived from the work situation itself.

The special significance of negative events happening in the workplace and employees’ experiences of them were recognised early on by researchers investigating the causes and effects of stress in the workplace. One of numerous models taking the existence of such events into account is the organisational health model (Hart & Cooper, 2001), which entails a direct relationship between organisational and individual characteristics and the well-being of employees, which in turn have a direct impact on organisational performance (Hart & Cooper, 2001).

The organisational health model makes a clear distinction between organisational climate (which is defined as employees’ perceptions of organisational processes, activities, and everyday events at work), and positive and negative work experiences (which relate to employees’ emotionally laden experiences about these events). In other words, the organisational climate is not related to how people feel about their organisation – it is merely a judgement or perception about what is happening. On the other hand, work experiences...
represent the emotional impact that those processes, activities and events have on employees. For example, if colleagues do not invite an employee to have a coffee with them during the break, it is an event (and therefore, an element of the organizational climate). How that event affects the employee represents an experience – it can negatively or positively affect him/her, or the employee can be indifferent about it.

The role of work experiences is independent and divided in respect to their nature – negative experiences have a greater impact on distress, while positive ones have a more powerful effect on motivation and “working morale”. According to the model we can expect that negative experiences will be associated with negative indicators – distress and psychophysical symptoms. Since these events have been consistently shown to be significant in predicting negative indicators of work performance, it is of special importance that they be taken into account, both in the prediction of psychophysical symptoms and of turnover intentions (Kalaj, Jelić, Berat, & Popov, 2012).

The present study

The theoretical framework for this research was the REBT model, specifically the diathesis-stress model, according to which negative workplace experiences activate irrational beliefs, and this interaction leads to the increase in psychophysical symptoms. Accordingly, the objectives of the study can be summarised as follows: (1) to investigate whether the effect of negative workplace experiences on the intensity of psychophysical symptoms depends on the extent of irrational beliefs in the employee (i.e. the moderating effect of irrational beliefs); (2) to investigate whether negative affectivity functions as a mechanism by which irrational beliefs, negative workplace experiences and the interaction of these two predictors have an effect on the intensity of psychophysical symptoms (i.e. the mediating effect of negative affectivity); (3) to investigate the predictive power of a model based on Negative Affectivity (NA), Negative Experiences at work (NE), Irrational Beliefs (IB), and Psychosomatic complaints (PSC) for sickness absenteeism (ABS); (4) to determine which (if any) dimension of psychosomatic health has the strongest impact on sick-leave duration.

Hypothetical model

In the following section we will present the hypothetical model and give a rationale for each of the hypotheses given. As mentioned in the introductory text it has been shown on multiple occasions that irrational beliefs, alone and in interaction with stressful life events, have an impact on different well-being indicators (David et al., 2005; Popov & Popov, 2013). To the best of our knowledge, there have been very few studies so far aimed at investigating the interplay of irrational beliefs and negative affectivity in the prediction of psychosomatic complaints and sickness absence. One of them (van Wijhe, Peeters, & Schaufeli, 2013) found that, after controlling for negative affect, only one dimension of irrational beliefs was
associated with workaholism – leading to the conclusion that irrational beliefs largely do not have incremental power in explaining workaholism over and above negative affectivity. Similarly, we postulate that NA functions as the mechanism by which irrational beliefs exert their effect on psychosomatic complaints (PSC), and indirectly, sickness absence. Finally, as in the case of IB alone, we expect that the interaction of NE and IB will also not have a direct effect on PSC. Considering the above-mentioned, we put forward the first hypothesis:

**Hypothesis 1:** Negative affectivity (NA) will fully mediate the relationship between Irrational Beliefs (IB) and the interaction of negative experiences and irrational beliefs (NExIB) on the one hand, and psychosomatic complaints (PSC) on the other.

a) Irrational beliefs will not have a direct effect on psychosomatic complaints (PSC), but only an indirect one, via negative affectivity (NA).

b) The interaction of negative experiences and irrational beliefs (NExIB) will not have a direct effect on psychosomatic complaints (PSC), but only an indirect one, via negative affectivity (NA).

As stated in the introductory part of this paper, the independent predictive power of negative work experiences has been proven a number of times (Cotton & Hart, 2003). On the other hand, NA has been shown to act as a mediator between stressors and various stress indicators, occupational well-being, and withdrawal behaviour (Höge & Büssing 2004; Kaplan, Bradley, Luchman, & Haynes, 2009). On the basis of that, we postulate our second hypothesis:

**Hypothesis 2:** Negative affectivity (NA) will partially mediate the relationship between negative experiences at work (NE) and psychosomatic complaints (PSC). In other words, negative experiences at work (NE) will exercise both a direct and an indirect effect on psychosomatic complaints (PSC), via negative affectivity (NA).

Based on previous studies which suggest that sickness absenteeism is best predicted by employee well-being indicators (Kuoppala et al., 2011; Schaufeli et al., 2009), we put forward the third hypothesis (see figure 1 for the integrated hypothetical model):

**Hypothesis 3:** Psychosomatic complaints (PSC) will fully mediate the relationships between negative experiences (NE), irrational beliefs (IB), the interaction of negative experiences and irrational beliefs (NExIB), and negative affectivity (NA) on the one side, and absenteeism (ABS) on the other. In other words, all predictors in the model, namely negative experiences (NE), irrational beliefs (IB), interaction of negative experiences and irrational beliefs (NExIB), and mediator negative affectivity (NA), will exhibit an indirect effect on sickness absenteeism (ABS).
Figure 1. A mediated moderation model between negative experiences at work (NE), irrational beliefs (IB), interaction of negative experiences and irrational beliefs (NExIB), negative affectivity (NA), psychosomatic complaints (PSC), and sickness absenteeism (ABS). All relationships are hypothesized to be in the positive direction.

Method

Participants and procedure

The participants in this research were employees from 18 organisations from the state and private sectors from the territory of the Autonomous Province of Vojvodina in Serbia (Table 1). Before administering the questionnaires, the researcher secured the agreement of the representatives of the management that they would ask employees in written form to participate in the research. An effort was made to use a stratified sample, the strata being comprised of different organisational units within the company, and for sampling within strata to be probabilistic. This was not always possible for technical reasons, so sampling within strata was convenient in some companies.

The battery of instruments comprised a title page with basic information on the research, information on how the research would be used and contact details of the authors of the research. On the second page, each participant read a statement and indicated with a tick their informed consent to participate in the study. After completing the questionnaire, each participant placed the completed questionnaire into an envelope which they had received, sealing it and handing it to the researcher or study associate. The number of employees taking part in the research within a given company varied between 20% and 92%. The sample included a large number of companies from the public sector with a correspondingly large number of employees. In terms of the number of employees in the organisations, the companies included in this sample were mostly of small and medium size. Therefore, the results of this research can be applied in prediction of psychophysical health and sickness absenteeism among employees in public, small and medium size companies.
Table 1
Socio-demographic description of the sample (N=499)

| Variable                      | Descriptive statistics                                      |
|-------------------------------|-------------------------------------------------------------|
| Gender                        | 133 males (26,7%); 347 females (69,5%); 19 no answer (3,8%) |
| Sector                        | 341 (68,3%) public; 158 (31,7%) private                     |
| Age                           | M=39,05; SD=10,17; Min=20; Max=65; 38 no answer (7,6%)      |
| Years of service              | M=13,66; SD=10,45; Min=0,5; Max=43; 38 no answer (7,6%)     |
| Category of employee          | 415 non-managers (83,2%) i 45 managers (9%); 39 no answer (7,8%) |
| Level of education            | 6 elementary school (1,2%), 131 secondary school (26,3%), 61 college/bachelor degree (12,2%), 247 university diploma/master degree (49,5%) i 35 Magisterium/PhD (7%); 19 no answer (3,8%) |
| Average hours worked per week | M=40,04; SD=7,95; Min=6; Max=70; 26 no answer (5.4%)        |

Five participants were eliminated from the analysis due to having more than 5% of the values missing (Tabachnik & Fidell, 2001). Of the total of 499 employees with completed questionnaires 22 were eliminated due to multivariate outliers (with significant Mahalanobis distances of p<.001).

Measures and instruments

A total of 504 questionnaires were collected. Alpha coefficient for each scale used in the study is shown in Table 2 in the Results section.

The Positive and Negative Workplace Experience Scale (PNWES; Popov, 2013) is a questionnaire that was developed with a resemblance to the Life Event Stress Scale (Sarason Johnson, & Siegel, 1978). It consists of 32 items, where each item represents a particular event or condition in the person’s workplace. The task of the subject is to indicate (1) how often the event or condition arises in the workplace and (2) how that affects them. The format for the first is a four-degree rating scale (“never or almost never”, “rarely”, “often” and “very often/ almost always”), while the second entails a five-degree response scale format (“extremely negative”, “negative”, “neutral/no effect”, “positive”, “extremely positive”). Only the second scale was used for this research, where perceptions of the event were categorised in one of two ways, as judged by the subject: positive and negative (examples: “You get contradictory instructions and work-related requests from different sources (supervisor, colleagues etc.)”; “You receive help and support from your colleagues when you need it”). The scale allowed for two open questions where subjects could add an event which was not mentioned in the 32 items and evaluate its effects according to the same principle. In this study, only Negative experiences were computed and used. Some basic psychometric properties of the scale are presented in Table 2 (please refer to Popov, 2013 for the details).

SIAB-PANAS (Novović & Mihić, 2008) is a Serbian adaptation of the PANAS-X scale (Positive and Negative Affect Schedule-X; Watson & Clark, 1994). SIAB-PANAS is intended for assessing positive and negative affect in people. The questionnaire comprises a total of 20 items, and the task of the subject is to write, on the line after each description, a number from 1 to 5, depending on the extent to which they generally experience certain feelings (example of description for Positive affectivity: “enthusiastic”, “inspired”, and for Negative affectivity: “upset”, “scared”). The scale has been validated on a Serbian sample a number of times and...
has demonstrated good psychometric characteristics (PA, $\alpha = .85$; NA, $\alpha = .83$; Novović, Mihić, Tovilović, & Jovanović, 2008). In this study, only Negative affectivity subscale was used.

**The Irrational and Rational Beliefs Scale** (IRU–16; Tovilović & Popov, 2009) is a scale that was created for the purposes of evaluating the frequency of irrational and rational beliefs, formulated according to the REBT theory. This scale measures two theoretical constructs, irrational (example item: “I need people to like me and accept me and I cannot bear it when I realise that this isn’t the case”) and rational beliefs (“It is important for me to succeed and achieve my goals, but even when I fall short or experience failure I can cope with it and carry on’’). It comprises a total of 16 items, and the task of the subject is to evaluate how often they think a certain way on a five-item Likert-type scale (options offered are “never”, “rarely”, “sometimes”, “often” and “very often”). In previous research the scale has shown satisfactory metric characteristics (Cronbach’s $\alpha$ for both subscales was .76) and meaningful coefficients of convergent validity with relevant constructs (e.g. IB with distress, $r=.31$; RB with distress, $r=-.18$; Popov & Popov, 2013). In this study, only Irrational beliefs subscale was used.

**Psychophysical Health Scale** (SPFZ–2; Majstorović, 2011) is a newly-derived scale, the main purpose of which is to assess self-reported psychophysical health, i.e. the degree of presence of any of the symptoms of psychosomatic complaints. The task of the subject is to use a four-degree Likert-type rating scale to evaluate the extent to which they had experienced some of the symptoms in the last few weeks (possible responses: “no, I have not”, “yes, but rarely”, “yes, often”, “yes, daily”). The scale measures five groups of symptoms: 1) physical symptoms (example item: “In the last few weeks have you had any stomach or other digestion problems (gastritis etc.)?”), 2) fear and anxiety (“In the last few weeks have you been frightened for no specific reason?”), 3) depressive reactions (“In the last few weeks have you had the thought that it is better to die than carry on living?”), 4) social impairment (“In the last few weeks, have you avoided meeting people?”) and 5) fatigue (“In the last few weeks have you had the feeling you were tired for no apparent reason?”). The original scale had 23 items, but based on data from pilot studies this was reduced to a final 15 items (three items per measured construct). This is the first time this abbreviated scale of psychophysical symptoms has been used for research purposes ($\alpha = .85$ for the scale as a whole).

**Number of days of absence** is the number of working days on which the employee was absent from work due to sickness, accident or injury at work. This variable was integrated as the response of the subject to a question asking how many days they had been absent from work due to sickness or injury at work in the last three months. It has been shown that data on sick leave gathered from company records are preferable as an outcome measure to sick-leave data obtained from questionnaires or interviews. However, in this study we used self-report sick-leave data, since previous studies have shown satisfactory agreement between the company record and the self-report sickness absence for the 3-monthly recall period (van Poppel, de Vet, Koes, Smid & Bouter, 2002; see also Ferrie et al., 2005; Schaufeli et al., 2009; Severens, Mulder, Laheij, & Verbeek, 2000).

**Data analyses**

Firstly, the program SPSS for Windows, version 22.0 was used for descriptive statistics and the calculation of correlations between the variables, while for testing of the hypothesis, mediated moderation path analysis (Morgan-Lopez & Mackinnon, 2006) was carried out in the program EQS 6.1 for Windows (Bentler, 2006). In testing the adequacy of the research model, the following absolute fitness indices were taken into consideration:(1) the Sattora-Bentler $\chi^2$ goodness-of-fit statistic, (2) the root mean square error of approximation (RMSEA), and (3) the standardised root mean-square residual (SRMR). Because $\chi^2$ is sensitive to sample size, three relative goodness-of-fit measures were calculated as well: (1) normed fit index (NFI),
(2) non-normed fit index (NNFI) and (3) comparative fit index (CFI). Values smaller than .05 for RMSEA may indicate a good fit, smaller than .08 are indicative of an acceptable fit, and values greater than .10 may indicate a serious problem (Brown & Cudeck, 1993; Kline, 2010). For the three relative fit indices, values greater than .90 may indicate a good fit (Hoyle, 1995). However, Hu and Bentler (1999) have recommended a slightly higher threshold, such as .95 for the CFI. For the SRMR, Hu and Bentler (1999) have set a threshold of ≤ .08 for acceptable fit, but Kline (2010) has suggested that this value is not a very demanding standard.

Results

Descriptive indicators

The results obtained through descriptive analysis (see Table 2) show that the distribution of all variables except ABS did not significantly deviate from normal. The distribution of the ABS variable showed significant deviation from normal, which is in line with the results of previous studies (e.g., Hardy, Woods, & Wall, 2003; Schaufeli et al., 2009). Hence the recommendation is that the scores for the variable be transformed in order to make the distribution appropriate for parametric analysis (Tabachnick & Fidell, 2001). In our case the distribution of the variable had an extreme positive skew, with exceptionally high positive values for skewness and kurtosis (Sk=4.84, K=28.80). The log10 transformation that is otherwise frequently used in such cases (Schaufeli et al., 2009) did not give satisfactory results (Sk=2.07, K=2.91). For this reason the Tukey formula was used to normalise the scores for this variable, which gave acceptable results, although the distribution still deviated from normal (Sk=1.96, K=2.54). However, this information is not of great concern, given that the EQS robust method for parameter estimation allows us to work with data the distribution of which deviates from normal (Bentler, 2006). Cronbach’s alpha coefficients indicated a satisfactory reliability for all the subscales used in the research. Finally, from the intercorrelation matrix (Table 2) it can be seen that all the variables showed significant relationships.

Table 2
Mean (M), Standard Deviations (SD), Skewness (Sk), Kurtosis (K), Range, Internal consistencies, and Zero-Order Correlations of the Study Variables (N=477)

| Variables                          | M    | SD   | Sk   | K    | Range | 1   | 2   | 3   | 4   | 5   |
|------------------------------------|------|------|------|------|-------|-----|-----|-----|-----|-----|
| 1. Negative experiences (NE)       | 8.95 | 8.01 | .99  | .68  | 0–40  | n.a.²|     |     |     |     |
| 2. Irrational beliefs (IB)         | 12.61| 5.83 | .32  | -.09 | 0–31  | .219**| .83 |
| 3. Psychosomatic complaints (PSC)  | 24.18| 5.95 | .89  | 1.05 | 15–50 | .352**| .393**| .85 |
| 4. Negative affect (NA)            | 17.66| 5.98 | .95  | .54  | 10–38 | .281**| .475**| .613**| .89 |
| 5. Absenteeism (ABS; no. of days)¹| 1.22 | 3.68 | 1.96 | 2.54 | 0–30  | .019 | .023| .132**| .086| n.a.²|

¹ Sk and K reported after transformation ² Cronbach’s α in the diagonal of the intercorrelation matrix; α not applicable for Negative Experiences and Absenteeism (see text for details)
Model testing

The first model (M1) showed excellent goodness-of-fit indices ($S-B \chi^2 (6)=8.123, p=.23, CFI=.99; NFI=.97; NNFI=.98; RMSEA=.03; SRMR=.02$). However, the LM test for adding significant parameters suggested the addition of a direct path from irrational beliefs to PSC ($\beta=.09$). It is theoretically sound to expect a direct relationship between IBs and psychophysical symptoms this in the context of the REBT model (David et al., 2005; Macavei, 2005; Szentagotai, & Freeman, 2007), we did so in model M2. Finally, the Wald test for removing insignificant paths suggested that there were two insignificant parameters in the model (the relationships between NE and NExIB, as well as the path from NExIBto NA; both $p>.05$), which were removed. There were no theoretical or statistical reasons to further modify the model (see Table 3). Figure 2 depicts the final model.

Table 3  
Fit indices of the models

| Model | $S-B \chi^2$ (df) | CFI  | NFI  | NNFI | RMSEA (90% CI) |
|-------|---------------------|------|------|------|----------------|
| M1    | 8.123(6)            | .991 | .967 | .977 | .028 (.000; .071) |
| M2    | 7.672(7)            | .997 | .969 | .994 | .015 (.000; .061) |

Figure 2 shows the extent and significance of the coefficients for both M1 and M2 models. From the figure it can be seen that the hypothesised associations between the constructs were significant, except in the case of the NExIB interaction, which did not have a significant effect on NA. Also, the LM test did not suggest the existence of a direct effect of NExIB on PSC. This leads to the conclusion that the effect of NE on PSC does not depend on the level of IB – either directly or indirectly (hypothesis 1b rejected). As already mentioned IB, besides its indirect effect on PSC (via NA), also had a direct effect on PSC, which practically means that NA did not fully mediate the relationship between IB and PSC. Considering all this, the null hypothesis that IB would not have a direct effect on PSC has to be rejected. On the contrary, both NA and IB did have a significant direct effect on PSC (hypothesis 1a rejected). Results further showed that negative experiences exhibited both a direct and an indirect (via NA) effect on PSC (hypothesis 2 supported). Finally, PSC indeed fully mediated the relationship between NE, IB, NExIB, and NA on the one hand, and ABS on the other (leaving all mentioned predictors and NA “only” with an indirect effect on ABS; hypothesis 3 supported). However, the proportion of the variance of sickness absenteeism explained by this model was rather small.
In order to examine which of the dimensions of psychophysical health is the largest contributor to the prediction of absenteeism, we conducted some additional analyses. Instead of the total score on the scale SPFZ–2 we included every dimension of psychosomatic symptoms (namely, physical symptoms, fear and anxiety, depressive reactions, social impairment, and fatigue). Fit indices for these models and standardised coefficients between the dimensions of psychological and physical symptoms and absenteeism are shown in Table 4.

Table 4
Goodness-of-fit indices for the tested models and standardized coefficients between dimensions of psychosomatic complaints and absenteeism

|                              | χ²    | df  | RMSEA(90% CI) | NNFI  | CFI    | Standardized coefficient |
|------------------------------|-------|-----|---------------|-------|--------|--------------------------|
| Physical symptoms            | 9.094 | 6   | .034(.000;.075) | .948  | .979   | PS→ABS                   |
| Fear and anxiety             | 8.762 | 6   | .032(.000;.074) | .968  | .987   | ANX→ABS                  |
| Depressive reactions         | 9.101 | 6   | .034(.000;.075) | .946  | .978   | DEP→ABS                  |
| Social impairment            | 6.017 | 6   | .003(.000;.061) | 1.000 | 1.000  | SI→ABS                   |
| Fatigue                      | 6.655 | 6   | .016(.000;.064) | .992  | .997   | F→ABS                    |

Note. *** p <.001, ** p <.01, * p <.05; coefficients and numbers refer to model fit indices: χ² – Satorra-Bentler chi-square; df – degrees of freedom; RMSEA – root mean square error of approximation; NNFI – non-normed fit index; CFI – comparative fit index; PS – physical symptoms; ANX – fear and anxiety; DEP – depressive reactions; SI – social impairment; F – fatigue; ABS – sickness absenteeism
From Table 4 it can be seen that although the model with social impairment has the best fit indices, the fatigue and physical symptoms have significant direct effects on the number of days of sick leave.

**Discussion**

The objective of the paper was to investigate whether negative affectivity was a (partial or full) mediator variable in the relationship between negative experiences and irrational beliefs, and their interactions on the one hand and psychophysical symptoms on the other. We also wanted to investigate whether one could reliably predict sickness absenteeism on the basis of these variables.

With the REBT theory as our conceptual framework, the restrictive hypothesis was put forward that NA functioned as a full mediator between irrational beliefs and the interaction between beliefs and negative experiences (NE). The results obtained support the presumed direct and indirect (via NA) effect of irrational beliefs (IB) on the intensity of psychophysical symptoms (PSC). On the other hand it was determined that the interaction IBxNE did not exert either a direct or an indirect effect on PSC, which did not lend support to the REBT theory. Additional analyses confirmed that of all the dimensions of psychophysical health, only physical symptoms and fatigue significantly predicted sick-leave. In the following discussion we will examine the four main findings of this paper: 1) the lack of significance in the interaction IBxNE in the prediction of PSC, 2) the significance of IB in the prediction of PSC, both directly and indirectly via NA, 3) the relative low percentage of absenteeism (ABS) variance explained by the model, and 4) physical symptoms and fatigue being the only two dimensions of general health that have had a significant effect on sickness absenteeism.

The findings regarding the lack of interaction of IB with stressors in the prediction of dysfunctional emotional states have been obtained before (Chang, 1997; Popov & Popov, 2013). These and similar findings again raise the old question of whether IBs are stable personality traits which have a direct effect on mental health indicators, or whether this happens in interaction with adverse life events. In order to answer this question we need to understand the nature of IBs. Popov & Popov (2013) have offered a number of possible reasons for which irrational beliefs do not interact with stressors in the prediction of distress and burnout at work. The findings from this study suggest that irrational beliefs may be regarded as a relatively stable (though not immutable) pattern for evaluation, which has an unfavourable impact on psychophysical health, even when the person is not exposed to objectively stressful situations and/or conditions. In other words, the subjective evaluation of a potential work– and work environment-related activating event has greater value in the prediction of work stress and its consequences than its objective stressful characteristics. As REBT theory – and also the transactional stress theory – suggest, it is important to take into account the relevance of the potential stressor for the specific individual in order to better understand and explain the existence of significant individual differences in the ways people react to the same event. Accordingly,
we cannot with absolute certainty claim that specific circumstances represent a stress reaction trigger in all employees. However, as the results obtained show, this does not mean that stressors are irrelevant in the stress process. There is no question that there is a wide range of situations and conditions which give rise to distress and its consequences on the behavioural level and in terms of physical and mental health, not just indirectly (i.e. through the mediation of irrational beliefs), but also directly. These situations and conditions represent a negative experience for the great majority of people, regardless of whether they think of them in a rational or irrational way. This finding is not in line with REBT theory, specifically with the diathesis-stress model, which presumes that stress reactions are a result of the interaction of stressors with irrational beliefs as cognitive factors of vulnerability to the development of emotional disorders, and which has only partially been borne out by the findings of previous studies (Chang, 1997; Marić, 2002). Practically speaking, these findings indicate that primary intervention aimed at reducing and/or eliminating sources of stress at work could be of huge significance in the treatment of distress and its consequences, which is in accordance with the suggestions of other authors (Weinberg, Sutherland, & Cooper, 2010). On the other hand, a comprehensive and targeted approach to improving the psychophysical health of employees also requires the implementation of secondary interventions, focused on the modification of non-adaptive thought patterns and hence of reactions to various stressors (see Gardner et al., 2005; van Rhenen, Blonk, Schaufeli, & van Dijk, 2007). This is supported both by the fact that many sources of stress at work cannot be fully eliminated, and by the findings of this study which indicate that IBs exert an effect on PSC independently of NE, and that part of that effect is direct, i.e. it cannot be explained by the effect of the NA mechanism. This effect is not great, but it is statistically significant. In this respect it has been shown that IBs have incremental power in predicting PSC, i.e. that their effect cannot fully be explained by basic constructs such as NA. Other studies can be found in the literature which have likewise shown that IBs have additional explanatory power in the prediction of different mental health indicators, directly and not only via basic personality dimensions and other characteristics (Peruničić, Vukosavljević-Gvozden, & Marić, 2012). It may be concluded that a high level of irrational beliefs contributes independently to poorer psychophysical health, regardless of NA, and even in the absence of negative experiences at work.

The finding that relatively little variance in absenteeism is explained by the model is also an interesting one. This practically means that there are other variables intervening in the relationship between the investigated predictors and absenteeism. One particularly interesting variable to be considered would be presenteeism. The average number of days off work in our sample was not unusually low. By way of comparison, in the UK workers had an average of 4.4 days off due to sickness in 2013 (Office for National Statistics, 2014), which is comparable to the 1.22 per every three months in our sample. However, since general health tends to be poorer (at least according to the Euro Health Consumer Index; Björnberg, 2013) and burnout levels to be higher in Serbia compared to some western European countries (see Borritz et al., 2006), it is
possible that employees in Serbia come to work even when they feel ill, in order not to have their salaries cut (see also Roelen & Groothoff, 2010). Another potential reason might be that employees are taking sick leave when they have other obligations (family or another job) rather than when they are genuinely ill. Thirdly, it is possible that some other personality variables (such as hardiness, resilience, coping strategies, etc.) might moderate/mediate the relationship between different organisational/work characteristics on the one hand, and sickness absence, on the other.

Finally, in this study it was shown that physical symptoms and fatigue significantly predicted sick-leave, while anxiety, problems in social relations and depressive symptoms did not play a significant role in its prediction. This is not in line with the majority of the findings of previous studies, which show that the psychological problems of employees have at least a moderate effect on sick-leave (Duijts et al., 2007; Hensing & Spak, 1998; Nystuen, Hagen, & Herrin, 2001; Vaez, Rylander, Nygren, Åsberg, & Alexanderson, 2007). Inconsistencies across these findings can be attributed to the fact that in previous studies psychiatric diagnoses had mainly been taken as a principal indicator of psychological problems – and not self-reported mental health issues, such as anxiety, depressive symptoms, or problems in interpersonal relationships (as in this study). It is interesting to note that in the present study fatigue proved to be the greatest predictor of sick-leave. Previous studies have shown a significant overlap between burnout and fatigue (Leone, Huibers, Knottnerus, & Kant, 2008; Rossi et al., 2012), which may indicate that the fatigue can be explained as “unrecognised” burnout.

**Conclusion**

Although the percentage of variance explained by the assumed model of absenteeism is rather small, it is possible to draw several conclusions and practical implications. From the results of this study it is clear that the number of days of sick leave are not only the result of deteriorating health, but also due to other factors not included in this model. Also, these findings clearly suggest that psychological and physical health are affected by negative experiences at work and irrational beliefs, independently of one another. Even more interesting, this effect cannot be fully explained by the mechanisms of negative affectivity. This means that for the health of employees it is crucial to minimise the incidence of adverse conditions and events at work, such as poor relationships with managers, unrealistically high job demands and the like. Also, secondary interventions with the aim to challenge dysfunctional thoughts and teach relaxation techniques might also be beneficial – especially considering the fact that, compared to negative affectivity, irrational beliefs are more easily accessible for change (see Gardner et al., 2005; Linton et al., 2005; van Rhenen et al., 2007).

In addition, the research has shown that fatigue and physical symptoms have a significant and direct effect on the number of days of absence. Due to the likely correlation of fatigue and exhaustion with the burnout condition, interventions developed for the prevention and treatment of burnout could be
applied to prevent or reduce sick leave. The lack of an effect of psychological symptoms on absenteeism is not in line with previous research and requires further attention. However, it is possible that employees in Serbia tolerate these symptoms more easily or do not see them as a sufficient reason for sick leave. In the long run, going to work in despite the presence of psychological problems is not beneficial to anyone since it may lead to presenteeism, to long-term mental health issues, and ultimately to long-term sickness absenteeism.

Finally, the cross-sectional methodology and the sample used in this study require caution when coming to conclusions about the representativeness and generalisation of results in a real, stressful organisational context (e.g. in organisational change). Also, one of the obvious limitations of the study is the overrepresentation of females in the sample. This is however not especially surprising, given the fact that women are generally overrepresented in the public and nonprofit sectors (Lanfranchi & Narcy, 2013; Young-joo Lee, 2014). Finally, even though they are widely used in research, paper-and-pencil type of questionnaires may not be the most appropriate way of assessing irrational beliefs and other cognitive products. These kinds of doubt have been the subject of discussion in earlier papers (see discussion in Popov & Popov, 2013).

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RECEIVED 07.03.2015.

REVISION RECEIVED 12.10.2015.

ACCEPTED 26.11.2015.