PERSONAL RESOURCES AS MODERATORS IN RELATIONSHIP BETWEEN LEARNING ENVIRONMENT DEMANDS AND STUDENT BURNOUT

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Background and Aim of Study: The main aim of this study was to learn the personal resources interaction effect (self-efficacy, self-control, optimism and resilience) with the requirements of the educational environment (study load, clarity of requirements, task adequacy) on the student's burnout. The theoretical of the study basis was the Bakker JD-R model.

Material and Methods: We conducted a structural equation modeling with latent variable interactions to study data from a cross-sectional survey of student sample (N = 303; M_{age} = 18.38, SD = 1.53).

Results: The effect of the latent variable interaction – the requirements of the educational environment×personal resources – were statistically significant (β = – 0.11, p <0.001). Model with interaction explained 54% of the student's burnout variance, and the percentage increase in the explained variance as an interaction result is 14.3%.

Conclusions: It has been established that personal resources (self-efficacy, self-control, optimism and hardiness) have a systematic organization and form an integral factor at the empirical indicators level – a personal resources index, which is a buffer that mitigates student burnout caused by perceived stressors of the educational environment.

Keywords: personality, burnout, university students, LMS approach.

Основною метою даного дослідження було вивчення ефекту взаємодії особистісних ресурсів (самоефективності, самоконтролю, оптимізму і життєстійкості) з вимогами освітнього середовища (навчального навантаження, ясності вимог, адекватності завдань) на вигоряння студентів.

Було проведено моделювання структурними рівняннями із взаємодією латентних змінних для вивчення даних крос-секційного опитування вибірки студентів (N = 303; M_{age} = 18,38; SD = 1,53).

Ефект взаємодії латентних змінних – вимоги освітнього середовища×особистісні ресурси був статистично значущим (β = -0,111; р <0,001). R^2 для моделі з взаємодією дорівнює 0,54, а відсоток приросту поясненої дисперсії в результаті взаємодії становить 14,3%.

Встановлено, що особистісні ресурси (самоефективність, самоконтроль, оптимізм і життєстійкість) мають системну організацію і на рівні емпіричних індикаторів утворюють інтегральний чинник – індекс особистісних ресурсів, який є буфером, що зменшує вигорання студентів, яке виникає внаслідок сприйманих стресорів освітнього середовища.

Ключові слова: стрес, особистісні ресурси, вигоряння, студенти

Introduction

In recent years, one of the areas in which burnout research is widely carried out is the students' learning activities (Kutsal, Bilge, 2012; Osin, 2015; Rahmati, 2015; Walburg, 2014, etc.). The burnout phenomenon among students means a fatigue feeling due to learning requirements, with cynical and detached attitude to study and incompetence sense as a student (Schaufeli, Martinez, Pinto, Salanova, Bakker, 2002). The increasing number of academic burnout researches confirms indirectly the relevance of this problem. Burnout influence on the academic success and student health in a negative way. Therefore, the definition of burnout factors, their interaction effects are important to improve the prevention and correction approaches of this syndrome.

Scientists traditionally divided burnout factors into situational and personal. If academic burnout is determined as the requirements and resources theory (JD-R model, Bakker, Demerouti 2007; 2014), then the educational environmental characteristics of higher education institution will act as situational factors. They can be classified in two general reasons: the requirements and resources of the educational environment. Educational requirements are those physical, social or organizational learning aspects that require constant physical and psychological efforts. They involve physiological and psychological forces. When academic requirements are perceived as excessive, exceeding resources and abilities, they can drain student resources and lead to burnout. In other words, the academic environment requirements are stressors, which include exams, public speaking, overloading with academic tasks and limited time to complete them, etc. (García-Izquierdo, Ríos-Risquez, Carrillo-García & Sabuco-Tebar, 2015; Yamashita, Saito, & Takao, 2012).

In one of the meta-analytical researches, it was shown that different requirements of the organization environment (role conflicts, workload, role ambiguity) are important burnout predictors, especially depletion and cynicism (Alarcon, 2011)

In accordance with the JD-R theory, the resources of the education environment include the physical, social, or organizational aspects of learning, which: 1) are functional to achieve the goals related to learning; 2) reduce education requirements and the associated with them physiological and psychological expenses; and 3) stimulate personal growth and students development. Consequently, autonomy in decision making,

social support (help from teachers and classmates), etc. can be considered as the educational environment resources. The research results conducted within organizational psychology show that labor resources impede the negative attitudes development and play the buffer role in the relationship between work requirements and burnout (Xanthopoulou, Bakker, Demerouti, and Schaufeli, 2007).

Although personal factors are less important burnout predictors than situational factors, they are widely represented in burnout prediction researches. The reasons why personal characteristics are considered as burnout predictors are as follows: 1) people can perceive the requirements of the working environment in their own unique individual way and, accordingly, respond differently to them, depending on their personal characteristics; 2) a person can influence the objectal nature of the working environment, for example, emotionally stable extroverts can independently choose enriched working environments; 3) individual differences in personal traits affect how people cope with work requirements (Maslach et al., 2001; Bakker et al., 2014).

In the literature a large number of investigations are represented, which are devoted to the study of interrelationships such as wide personal traits, for example, those belonging to the Big Five, as well as narrower ones (for example, hardiness, optimism, etc.) with burnout measures: emotional exhaustion, depersonalization, and personal achievements (Jacobs & Dodd, 2003; Lee at al., 2017). However, the results of these researches are not always consistent. For example, some researchers (Jacobs & Dodd, 2003; Rostami, Abedi & Schaufeli, 2012) found that extroversion is associated with emotional exhaustion and decreasing sense of students personal achievement, while others – Morgan & de Bruin (2010), on the contrary, found that extraversion is associated with depersonalization and decreasing personal achievements.

Meta-analytical research by Alarcon et al. (2009) showed that such personal characteristics as: self-esteem, overall self-efficacy, internal control locus, emotional stability, extraversion, good faith, satisfaction, positive emotionality, negative emotionality, optimism, proactive individuality and resilience were associated with three dimensions of burnout.

It should be noted that in these investigations, personal characteristics acted as burnout predictors (personal traits correlation with burnout). However, they can also have either a mediator or moderator effect (Baron & Kenny, 1986) on the structure of the causal relationships between environmental variables (exogenous) and the effective variable (endogenous) – burnout. This approach, as is well known, allows us to answer the questions of how and why the variables of the external / educational environment influence on burnout. Also, many previous researches had one major drawback – they did not take into account the measurement error, which affected the accuracy of the regression parameters assessments. The usage of structural equation modeling makes it possible to level this drawback.

In a number of recent researches which were performed using structural modeling, the moderator / mediator role of personal variables has been shown in the relationship between work environment factors and burnout. Thus, in the Szczygieł, Baka work (2016), the moderating effect of emotional intelligence was discovered in the relationship between interpersonal conflicts at work and emotional exhaustion. It was observed only among those employees who had lower emotional intelligence and were in conflict with employees. The buffer (mediator) role of emotional intelligence was discovered in the relationship research between failures at work and burnout (Shkoler, Tziner, 2017). The researches (Otero-Lopez et al., 2010; 2014) show the mediator role of positive personality variables (optimism, endurance, life satisfaction) in the relationship between the perceived stress level by a teacher caused by various negative students actions (verbal teacher abuse, aggression among students, vandalism) and burnout.

Positive personal traits are understood as personality resources. The author of the researches conversation theory, S. Hobfoll (1989), notes that personal resources play a primary role in the context of coping with chronic stress, ensuring the individual's ability to adapt. Personal resources are aspects of Self that are connected with stress resistance and relate to people's feelings in their ability to control successfully and influence on their environment (Hobfoll, Johnson, Ennis, & Jackson, 2003). The author identifies several of these key personality resources.

Thus, one of the main personal resources, according to Hobfol, is a generalized sense of self-efficacy (Schwarzer & Jerusalem, 1995), which is defined as belief in one's ability to effectively influence on one's environment and achieve one's goals. As A. Bandura has shown, individuals who have a high level of self-efficacy are more resistant in stressful situations (Bandura, 1997).

Another key resource is optimism, which is understood as a personal variable that reflects in which extent people have generalized favorable expectations about their future (Carver, Scheier, Segerstrom, 2010). It was found that this personal trait is a strong predictor of burnout risk (Chang, Rand, & Strunk, 2000).

Finally, the important personal resource is such an integral feature as hardiness. Hardiness is defined as the degree to which a person is able to overcome stressful circumstances without suffering a deterioration in his physical and psychological health (Maddi & Khoshaba, 2005). It is shown that this personal resource reduces the negative stress sources impact (Chan, 2003).

Another personal resource that can be included in a model that promotes an student burnout understanding in the educational environment is self-control. Self-control is defined as the ability to change immediate dominant reactions or tendencies, thoughts, behavior, and emotions for a desired, but delayed result (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). In researches it is accepted to distinguish between self-control as a condition and disposition, which vary from individual to individual. Self-control as a condition is changeable depending on the situation and time. Dispositional self-control is a

relatively stable personal trait. The authors of the solid meta-analytical research about the relationship between dispositional self-control and behavior found that a high self-control level is related to many areas of behavior and its results (de Ridder et al., 2012). In particular, the strong self-control effect manifested itself in the education field. In general, the authors note that self-control is one of the most useful personality traits. This conclusion is confirmed by the results of a specific research conducted on students samples, and devoted to the research of the burnout relationship and self-control (Seibert, May, Fitzgerald, Fincham, 2016). The research revealed a negative relationship between dispositional self-control and academic burnout, and it was also shown that dispositional self-control softening the relationship between burnout and academic results (average mark, absenteeism).

Each of the four above considered personal resources is conceptually independent and has empirically justified discriminant validity regarding burnout. Students burnout is the result of the educational environmental requirements interaction and its subjective assessment, the scale of which is transformed depending on the key personal resources severity. In previous researches, these personal resources were investigated as separate burnout predictors. However, there is a need, noted by many authors (for example, Maslach & Leiter, 1999; Otero-Lopez et al., 2010; 2014), to integrate variables related to the prediction of burnout phenomenon in an explanatory model.

A number of resource concepts presupposes the existence of an integral personal characteristic as a higher order factor mediating the influence on the other resources and environmental factors (Leontiev, 2016). There are several concepts of personal resources "single factor": 1) basic self-assessment, 2) psychological capital, 3) personal potential.

One of the first attempts to isolate an integral index is the concept of core self-evaluation ("core self-evaluation"), which is considered as a fundamental assessment of one's own personality, one's abilities, one's value (Judge, Erez, Bono, Thoresen, 2002). Basic self-esteem includes four personal characteristics: control locus, emotional stability, self-efficacy and self-esteem. It has been established that high based self-esteem has a predictive value for protection against burnout at work (Best, Stapleton, Downey, 2005).

The concept of psychological capital is based on the identification of a single factor, which is formed by four personality traits: optimism, resilience, hope and self-efficacy (Luthans, Avolio, Avey, Norman, 2007). Research results show that psychological capital influence negatively on burnout (for example, Gökhan, Ergeneli, 2015).

Personal potential is considered as a personal basis of self-regulation and self-determination (Personality potential: structure and diagnosis, 2011). Theoretically and empirically grounded structural model of personal potential includes the following personal variables: autonomy, tolerance to uncertainty, control over the action in case of failure, optimism, resilience, self-efficacy. It has been shown that personal potential can contribute to various types of activities and their results (Olefir, 2015).

Thus, based on the theoretical analysis of previous researches, we assume:

Hypothesis 1: the four positive personality characteristics – self-efficacy, self-control, optimism, and resilience – are linked by a common factor of higher order – the personal resources index.

Hypothesis 2: The effect of the educational environmental requirements interaction and the integral indicator of personal resources will reduce the negative impact of requirements on the students burnout.

The purpose of the work was to study the effect of the interaction of the requirements of the educational environment and the integral indicator of personal resources in predicting student burnout.

Material and methods

Participants

The research involved 303 students (135 male and 168 female) aged from 17 to 21 years (M_{age} = 18.38, SD = 1.53). Participants were provided with general information about the research and they were assured of confidentiality and complete anonymity of the answers.

Measurements

Questionnaire of the educational environmental requirements and resources. The basis for it is the theory of requirements and work resources (Bakker, Demerouti, 2014). It contains 6 scales (3 items each, with a five-point scale of answers, where 1 point is "very rarely, never", 5 points – "very often, always"). In the present research, three scales were used: study load ("Is your study load irregular (when does a task accumulate?)", "Do you need to complete training tasks at a fast pace?"), clarity of requirements ("Do you have to do during, according to your feelings, should it be done differently?", "Does it happen that you receive instructions incompatible with each other from different teachers?"), adequate task complexity ("Does it happen that learning tasks are too difficult for you?", "Do you give learning tasks which perform you do not have enough resources? "). The reliability coefficient for the Cronbach alpha internal consistency for the scales was: workload of 0.71, clarity of requirements – 0.70, adequate task complexity – 0.67.

The generalized self-efficacy scale (Schwarzer & Jerusalem, 1995) with 10 items scale was used to evaluate self-efficacy. Participants were asked to rate the extent to which each statement relates to them on the scale from "absolutely wrong" (1) to "quite right" (4). The Cronbach alpha coefficient was 0.77 in the current research.

For the self-control diagnosis, a brief self-control scale BSCS – (Tangney, Baumeister, Boone, 2004) was used. The scale consists of 13 items, measured on the scale from 1, "I do not agree at all," up to 5, very similar to me. Statements examples are: "I am able to resist temptations well" (direct coding) and "I hardly give up bad habits" (reverse coding). The Kronbach α (alpha) coefficient was 0.74.

The tool to assess optimism was chosen as a revised version of Life Orientation Test (LOT-R; Scheier, Carver & Bridges, 1994). LOT-R consists of 10 items. The answers are based on the Likert-type scale, which varies between "strongly disagree" (value 0) and "fully agree" (meaning 4). The Kronbach α (alpha) coefficient in this research was 0.71.

A short version of the hardiness scale (Olefir, Kuznetsov, Pavlova, 2013) was used to assess this personal trait. The scale consists of 15 items with four-point scale of answers from 0 "No" to 3 "Yes" and includes questions covering three aspects of hardiness – involvement, control and risk acceptance. The Cronbach α (alpha) coefficients was 0.920 for the total scale.

Burnout was assessed using a questionnaire developed for this research, based on the SBI methodology (Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009). The questionnaire consists of 9 items with five-point scale of answers (Likert scale from 1 "Absolutely disagree" to 5 "I completely agree"), grouped into 3 subscales: emotional exhaustion, cynicism, a sense of incompetence. The internal consistency of the scale (α-Cronbach coefficient) was 0.79 in this research.

Statistical analysis. All analyzes were performed using structural equation modeling using Mplus version 7.2 (Muthen & Muthen, 1998–2010). LMS models are rated using the XWITH team. A robust version of the maximum likely method (MLR) was used.

The correspondence of the model under study to the empirical data was estimated using the statistics of the chi-squared test (χ^2) statistics and the mean square approximation error (RMSEA). Statistically insignificant χ^2 values indicate that the hypothetical model is consistent with the data, and the RMSEA value of up to 0.08 indicates an acceptable data suitability (Schumacker, & Lomax, 2010). In addition, we used the relative goodness-of-fit indices: Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). For these indices, the value of 0.90 or higher is acceptable.

Results

The empirical verification of the model in which different personal variables (self-efficacy, self-control, optimism, and hardiness satisfaction) are postulated as moderators of the three important stress sources effect derived from the learning environment demands (study load, clarity of requirements, and task adequacy) on student burnout (exhaustion, cynicism toward the meaning of university, and inadequacy sense) – and that is the objective of this research – has been conducted on the basis of path analysis using the latent moderated structural equations (LMS) approach. Table 1 shows the correlations, means and standard deviations corresponding to the variables are included in the model.

Table 1.

Correlations, means and standard deviations of the variables analyzed

	1	2	3	4	5	6	7	8	9	10
1. Study load	–									
2. Clarity of requirements	-.42**	–								
3. Task adequacy	.45**	-.22**	–							
4. Self-efficacy	-.26	.11	-.14*	–						
5. Self-control	-.31	.23**	-.22**	.46**	–					
6. Optimism	-.21	.18**	-.13*	.33**	.39**	–				
7. Hardiness	-.26**	.17**	-.17**	.40**	.60**	.33**	–			
8. Exhaustion	.37**	-.25**	.17**	-.28**	-.28**	-.16**	-.16**	–		
9. Cynicism	.37**	-.22**	.20**	-.18**	-.13*	-.16**	-.14*	.39**	–	
10. Sense of inadequacy	.41**	-.28**	.27**	-.28**	-.25**	-.14*	-.20**	.47**	.46**	–
Mean	13.70	9.57	10.90	30.16	38.37	17.22	26.62	11.04	9.09	5.49
S. D.	2.86	2.71	3.13	4.06	7.32	4.09	4.56	3.61	3.41	1.83

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The obtained results (see Figure 1) show that the model for measuring latent variables – the educational environmental requirements, the personal resources index, and burnout – is satisfactory. This is evidenced by the absolute and relative indices of data correspondence: c^2 (32) = 32.34, p = 0.45; RMSEA = 0.006, 90% CI = 0.000-0.004; CFI = 1.000; TLI = 0.998.

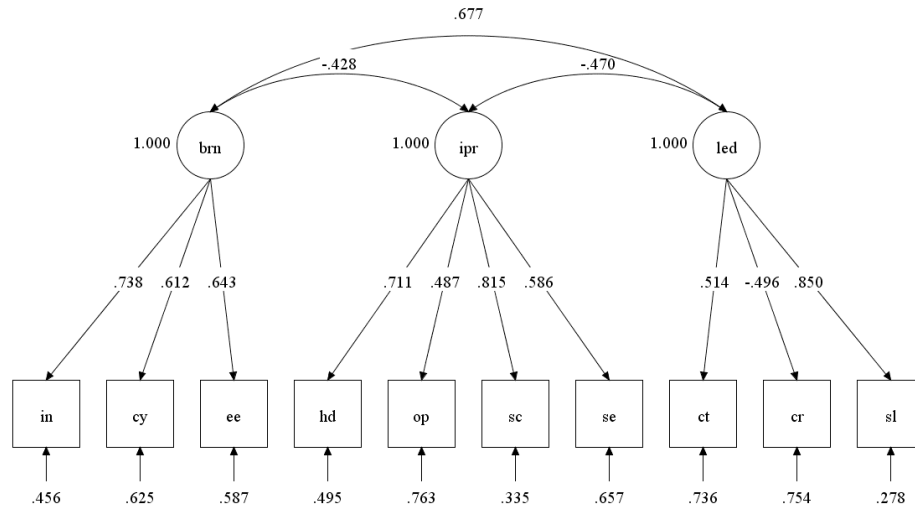Figure 1. Model for measuring latent variables

Note. Hereinafter: brn – burnout; ipr – personal resource index; led – requirements of the educational environment; in – inadequacy; cy – cynicism; ee – emotional exhaustion; hd – resilience; op – optimism; sc – self control; se – self–efficacy; ct – the task complexity; cr – the requirements adequacy; sl – study load.

The evaluation of the latent variables interaction effect – the requirements of the educational environment and the personal resources index was carried out in predicting student burnout in two stages (Muthen, 2012; Maslowsky, Jager, Hemken, 2015). At the first stage, the model was evaluated without the interaction of the variable educational environmental requirements and the personal resources index (model 0). Model 0 (see Figure 2) fits well the data: c^2 (32) = 32.34, p = 0.45; RMSEA = 0.006, 90% CI = 0.000-0.004; CFI = 1,000; TLI = 0.998. Latent variables – educational environment requirements and personal resource index statistically significantly predict student burnout (β = 0.61; SE = 0.08; p <0.001; 95% CI = 0.36–0.75 and β = -0.14, SE = 0.07 p <0.05, 95% CI = -0.30 – 0.03, respectively). Model 0 explained 47.4% of student burnout variance.
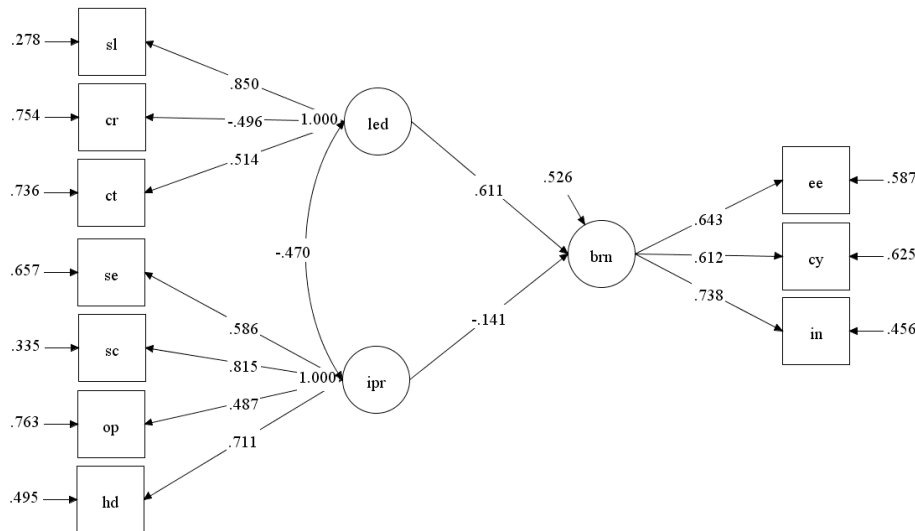

Figure 2. Structural model predicting burnout without interaction of latent variables

Then, model 1 was evaluated (Figure 3). The relative fit of model 1 to model 0 was determined using a likelihood ratio test comparing the log-likelihood values for model 0 and model 1. The log-likelihood difference value $DR^2 = R^2_1 – R^2_0$ was 21.13. Based on the model 0 (32) and model 1 (33) free parameters number, the difference in free parameters = 1, representing the value of df, which we used to test the likelihood ratio. The likely ratio test for the chi-square distribution was found to be statistically significant (p <0.001), which indicates that the model without the interaction effect represents a significant loss in fitting relative to the alternative model – the model with the interaction effect. The effect of the latent variables interaction – the requirements of the educational environment – personal resources were statistically significant (β = –0.111, SE

= 0.03, p <0.001, 95% CI = -0.17 – -0.05). Model with interaction explained 54% of student burnout variance, and the percentage increase in the explained variance as a interaction result is 14.3%.
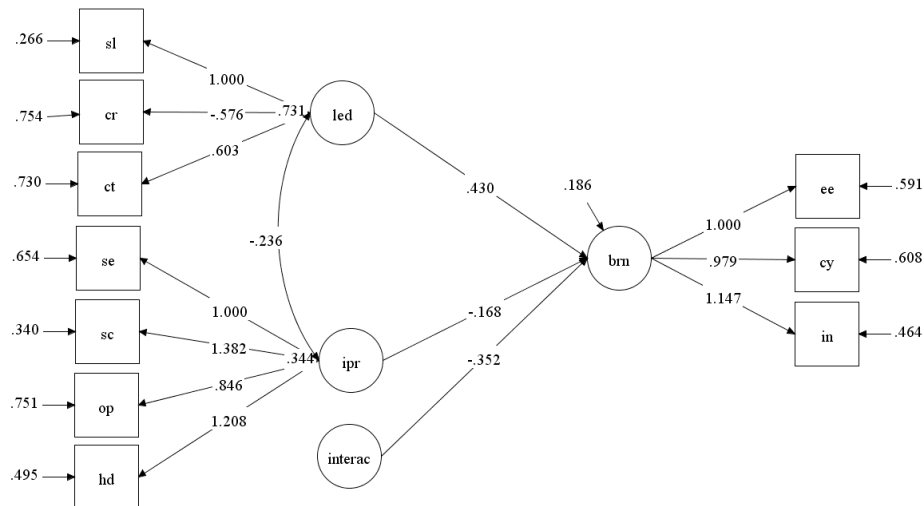

Figure 3. Structural model predicting burnout with interaction of latent variables – educational environmental requirements×personal resources

The construction of interaction graphs to assist in interpretation has shown that the relationship between burnout and the educational environmental requirements becomes more positive as the level of personal resources decreases (Figure 4).
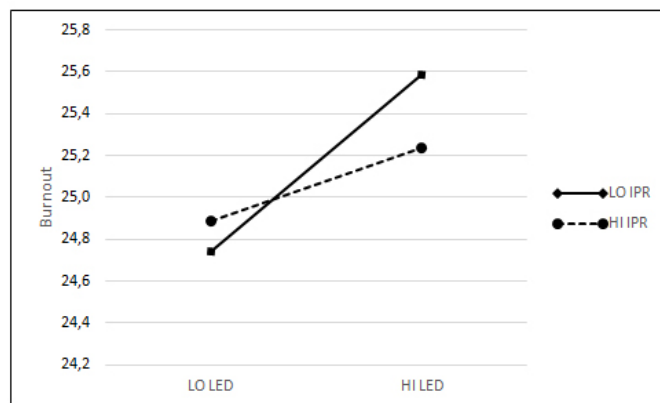

Figure 4. The interaction of the requirements of the educational environment and personal resources in the burnout forecast.

Discussion

The purpose of this research was to analyze the effect of the two latent variables interaction – the educational environmental requirements, perceived by students as stressors, and the index of personal resources in the prediction of the third latent variable – student burnout.

The results confirm the first hypothesis that the four positive personal characteristics are interrelated and form a factor of a higher order. This composite construct was defined by us as an "index of personal resources" (IPR) and is characterized by: 1) self-confidence, or self-efficacy, which allows you to apply the necessary efforts to solve complex problem; 2) self-control giving the opportunity to change the immediate dominant reactions, thoughts, behavior and emotions for the desired result; 3) optimism as a positive attribution of current and future successes with hope as perseverance in striving for a goal, coupled with the ability to change the paths leading to it, and 4) resilience, i.e. a system of attitudes that provide courage and motivation to turn stressful circumstances from potential disasters into growth opportunities.

As you can see, the IPR construct, both at the level of theoretical premises and at the level of concrete components, is close to the psychological capital model of F. Luthans (Luthans, et al., 2010). Indeed, both constructs constitute positive personality traits, which: a) are based on theory and empirical research; b) are the flexible person properties (state-like), have a lifetime genesis, and, therefore, can be adjusted and developed; c) connection with many effective variables is proved. It can be assumed that the interrelations of the analyzed variables are determined by a common mechanism, a synergistic effect arising in the course of complicating activities and gaining experience.

A meaningful analysis of the personal resources indicators loads on the resulting latent factor in the structural model suggests that self-control and resilience are the most significant personal resources. Students

who have a high level of self-control, control their thoughts better, regulate their emotions and inhibit their impulses compared with those who have a low level of self-control. They are able to focus on long-term goals and resist situational temptations and short-term gains. The high level of resilience contributes to the fact that students perceive the requirements of the educational environment not as a threat, but as a challenge, a source of development, personal growth. These results are consistent with the many available evidence on the importance of self-control and resilience as countermeasures for stress, (Chan, 2003; de Ridder et al., 2012; Maddi & Khoshaba, 2005).

The research results show that when stressors are analyzed independently of each other, they have a statistically significant relationship with the personal variables which were analyzed. As for the patterns of their joint change and in accordance with the previous literature on the discussed area (for example, Jacobs & Dodd, 2003; Osin, 2015), it is confirmed that such perceived stressors as the workload and the task difficulty are negatively linked by the analyzed personal variables, and the clarity of requirements has a positive connection. Our results also generally confirm the conclusion that there is a positive and significant correlation between various stressors and burnout.

As for the relationship between personal variables and burnout, the existence of important statistically significant connections is confirmed. However, it should be noted that the comparison of our results with the data of the meta-analytical research conducted by Alarcon et al. (2009) shows that the combination of self-efficacy, self-control, optimism and resilience in the integral factor has a greater predictive ability for burnout than each personal resource separately. The innovative contribution of this research to the discussed knowledge area in question is that four key personal resources have not been previously studied within the framework of an integrated model as predictors and moderators of student burnout. The study revealed that the stressful influence of the educational environmental requirements on the students burnout depends on the integral latent variable expression level – the personal resources index. The burnout level is higher for those students who have lower levels of IPR and perceive the requirements of the educational environment as more stressful. Thus, the second hypothesis was confirmed in the study. The obtained result explanation can be given as follows. In the educational environment, personal resources perform a buffer function. They mediate its influence on the consciousness and students activity, participating in the process of assessing the degree of stress factors influence, by providing the personal meaning of the learning situation. By themselves, they do not carry an assessment, but their severity transforms the subjective scale itself underlying the subjective assessments, contributing to the assessment of the situation. The high level of personal resources helps to perceive the educational environmental requirements as a challenge and regard them as a difficult task, and not as a factor threatening the students well-being.

The main research limitations are the correlation plan, which limits the possibilities of the obtained relationships causal interpretation, the subjective indicators of the learning environment characteristics. It is necessary to make researches using objective indicators of environmental characteristics.

Conclusion

The negative emotional state associated with emotional exhaustion sense, a cynical attitude to the learning process, sense of incompetence as a student, arising in the context of learning activities, is defined as burnout.

The results of the research showed that the perceived educational environmental requirements, which were considered in the research as stress antecedents, are positively and statistically significantly associated with the student burnout.

Personal resources have a systematic organization and at the level of empirical indicators form an integral factor – the index of personal resources. They are reliable predictors of burnout.

The personal resources interaction with the requirements of the educational environment statistically significantly reduces the influence of the educational environmental factors on the level of student burnout.

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