

# Articles

## The Slovak Version of the Burnout Assessment Tool (BAT) – Adaptation and Validation: A Pilot Study

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### Abstract

The objective of the study is the pilot adaptation and validation of the Slovak version of the Burnout Assessment Tool. The adaptation process included three independent translations, a back translation, a meeting of the research team to synthesize it into its final form, and validation of the back translation by the authors of the questionnaire. The research sample consisted of 266 Slovak teachers. Three models were tested for their factor structure using confirmatory factor analysis. The results showed that the most appropriate model (combining model quality and theoretical underpinnings) is the second-order model, with four primary factors that achieved excellent internal consistency values. Construct validity was supported by the identification of expected relationships between burnout and selected variables of the Job Demands-Resources model.

**Keywords:** burnout assessment tool, adaptation, factor analysis, reliability, construct validity.

# Slovenská verzia nástroja Burnout Assessment Tool (BAT) – adaptácia a validizácia: pilotná štúdia

## Abstrakt

Cieľom štúdie je pilotná adaptácia a validizácia slovenskej verzie nástroja Burnout Assessment Tool. Adaptačný proces zahŕňal tri nezávislé preklady, spätný preklad, stretnutie výskumného tímu za účelom syntetizácie do konečnej podoby a schválenie spätného prekladu autormi dotazníka. Výskumný súbor tvorilo 266 slovenských učiteľov. Konfirmačnou faktorovou analýzou sa overovali tri modely z hľadiska faktorovej štruktúry. Výsledky ukázali, že najvhodnejší (kombináciou kvality modelu a teoretických východísk) je model druhého rádu, so štyrmi primárnymi faktormi, ktoré dosahovali výborné hodnoty vnútornej konzistencie. Konštruktová validita bola podporená identifikáciou očakávaných vzťahov medzi burnout a vybranými premennými modelu Job Demands-Resources.

**Kľúčové slová:** Burnout Assessment Tool, adaptácia, faktorová analýza, reliabilita, konštruktová validita.

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## Introduction

Burnout syndrome can be defined as "a syndrome caused by chronic stress in the workplace that has not been successfully managed" - this definition is given in the 11th revision of the International Classification of Diseases (MKCH-11, 2023). Burnout is a psychological construct that affects both the physical and psychological state of workers and has been the subject of a great deal of research around the world. Research efforts in the area of burnout have resulted in the development of several instruments measuring this construct, the most well-known and widely used being the Maslach Burnout Inventory (MBI), which has been translated into many languages (Mutair et al., 2020), and although it has not yet been validated in Slovakia, it is nonetheless widely used (e.g. Daniel & Sarmány-Schuller, 2000; Baranovská & Doktorová, 2014; Novocký & Orosová, 2019; Fričová et al., 2020; Čopková, 2021).

In an attempt to identify the prevalence of burnout among teachers in Slovakia, we analyzed the relevant studies and found significant discrepancies in the results (Čopková, 2021; Fričová, et al., 2020; Fuchsová, Hruščová, 2016; Baranovská, Doktorová,

2014; Juhásová, 2011). This can be explained, among other things, by the fact that the MBI-ED questionnaire for teachers has not been properly validated in Slovakia, and the psychometric characteristics and stability of the factor structure have not been verified on a representative research sample. This leads to considerable inconsistency in the results and in the field of knowledge.

However, it is important to emphasize that even in countries where the questionnaire has been adapted, there are voices questioning its research quality. For example, the following problems are discussed in the professional discourse (Green et al., 1991; Galanakis et al., 2009; Oh & Lee, 2009; Pisanti et al., 2013; Deligkaris et al., 2014; Ráčzová & Köverová, 2020; Mutair et al., 2020; Schaufeli, De Witte & Desart, 2020 Bravo, 2021; Slabšinskienė et al. 2020):

- a. the results obtained from studies using translated versions of the questionnaire are often of poor quality, unreliable, and invalid,
- b. the subscales were originally thought to be independent, but the considerable intercorrelation of factors makes this claim questionable,
- c. factorially unstable,
- d. it is not based on theory, the entries are based on interviews with people who have suffered from burnout,
- e. it cannot be used for diagnostic purposes,
- f. lack of discriminatory validity (differentiating between those suffering from burnout and those in the at-risk group),
- g. given that it was developed in the 1980s and has remained essentially unchanged since then, it does not reflect the current state of knowledge, for example, that burnout also includes cognitive and psychosomatic difficulties.

Based on the above, there is a need to validate a high-quality research tool for measuring burnout syndrome in Slovakia in order to determine the prevalence of burnout, its correlates, and comparison with foreign studies. After a thorough theoretical analysis, we can state that the development of the Burnout Assessment Tool (BAT) questionnaire, which aims to eliminate the aforementioned shortcomings of the MBI questionnaire, is coming to the forefront in the current state of scientific knowledge. In this context, burnout is understood as a work-related state of exhaustion characterized by extreme fatigue, reduced ability to regulate cognitive and emotional processes, and mental distance.

A distinction is made between primary symptoms (exhaustion, mental distance, cognitive impairment, emotional impairment) and secondary symptoms (psychological complaints, psychosomatic complaints, depressive mood).

A key advantage of this tool is that it is based on a solid theoretical foundation. The authors of the questionnaire, Schaufeli, Desart, & De Witte (2020), conducted 49 in-depth, semi-structured interviews with experts who treated burnout patients to thoroughly understand burnout syndrome. The interviews resulted in two main findings,

firstly the interviews provided a list of symptoms of burnout, secondly they provided insight into the causes and consequences of burnout. Symptoms of burnout are classified into two areas: 1) primary symptoms (core symptoms) - exhaustion, mental distance, cognitive impairment, emotional impairment; 2) secondary symptoms - psychosomatic complaints, psychological complaints, depressive mood. Exhaustion refers to both physical and mental exhaustion; impaired emotional control refers to a reduced ability to adequately regulate emotional processes, such as anger or sadness; cognitive problems refer to a reduced functional capacity to adequately regulate one's cognitive processes, such as memory or attention. Cognitive processes and emotional regulation are impaired because employees feel too tired and exhausted to engage in them. This means that the symptom of exhaustion is a key factor. The last primary symptom is mental distance, which is accompanied by mental withdrawal and psychological disconnection from work. This symptom can be seen as a coping strategy to cope with exhaustion. However, such coping attempts are ineffective because they increase stress at work (e.g. can lead to conflict). Primary symptoms are accompanied by secondary symptoms, which include psychosomatic complaints, psychological complaints, depressive mood. These symptoms are considered secondary because they may also occur in other disorders, but they are important because they are often the reason that employees seek help.

An undisputed advantage of BAT is that it has good psychometric properties according to a meta-analysis by De Beer et al. (2020) (analysis of seven language versions). Both primary and secondary factors can be expressed in a single composite score, which is advantageous for practice and research due to the ease of interpretation. It has established cut-off scores and norms. In addition, it is freely available and used in 27 languages, including English, German, Russian, Polish, Ukrainian, and Czech.

A key area in the discussion of burnout syndrome is the Job Demands-Resources (JDR) model, within which the validation and interpretation of burnout syndrome takes place. The JDR model is a model of work stress, according to which strain is a reaction to the imbalance between job demands on the individual and job resources with which they must cope with these demands (Bakker, Demerouti & Sanz-Vergel, 2023), with burnout being positively related to job resources and negatively related to burnout. Job demands are defined as the physical, psychological, social, or organizational aspects of the job that require sustained physical, cognitive, and/or emotional effort and are therefore associated with certain physiological and/or psychological costs. Job resources are defined as the physical, psychological, social, or organizational aspects of the job that have motivating potential, that are functional in achieving work goals, that regulate the impact of job demands, and that stimulate learning and personal growth (Bakker & Demerouti, 2017). According to this theory, high job demands increase the risk of burnout and lead to negative outcomes (e.g., tendency to leave the organization, health problems, etc.); on the other hand, high job resources are a motivational

component that promotes commitment and leads to positive outcomes (higher performance, commitment to the organization) (Bakker & Demerouti, 2017). Employee health and personal well-being are the result of a balance between resources and demands at work (Schaufeli & Taris, 2014). In the context of validating the Slovak version of BAT, we worked with selected variables related to job demands (specifically: work overload, work demands, bureaucracy, role conflict, quantitative and qualitative job insecurity, harassment) and job resources (specifically: role clarity, team spirit, performance, job satisfaction, engagement, reciprocity) to support construct validity.

From the above, the BAT instrument appears to be a suitable method for identifying burnout syndrome, especially because of its solid theoretical grounding, international adaptation, and adequate psychometric characteristics. The aim of this pilot study was to validate the psychometric characteristics of the Burnout Assessment Tool (BAT) developed by Schaufeli, Desart, & De Witte (2020) on a research sample of Slovak teachers. Specifically, we confirm:

- the factorial structure of the questionnaire (we test a one-dimensional model, a model with four correlated factors, and a second-order model), assuming good fit indices for the tested models (Hypothesis 1)
- satisfactory internal reliability (consistency) of BAT for both the total score and individual subscales (Hypothesis 2)

In line with JDR theory, we test the convergent validity of BAT, assuming that its dimensions are negatively associated with job demands and positively associated with job resources.

## 1 Research Methodology

### 1.1 Sample

The research sample consisted of teachers who enrolled for additional pedagogical studies at the Catholic University in Ružomberok. Within this, 530 teachers were contacted, with a return rate of 270 questionnaires (51%). After checking, 4 questionnaires were discarded due to incompleteness, thus the research set consisted of 266 respondents. The data collection took place during the months of August-September 2023. The criteria for inclusion in the study were that the participants be Slovak teachers and voluntarily agreed to participate. Participants were informed of the research objectives and gave their informed consent to participate in the research. They were also assured that participation in the research was voluntary and responses would remain anonymous.

In terms of gender, women predominated in the research sample with 225 (84.6%), compared to 40 (15%) men; one respondent did not fill in the gender information (0.4%). The age ranged from 24 to 66 years, with a mean age of 43.4 years (SD 8.403). The average length of experience of respondents in their current job was 12.45 years, the average total length of experience was 18.74 years. Of the total respondents, 60.9% were in a management position.

## 1.2 Instruments and Procedures

### *Procedure*

Translation and adaptation. The original BAT questionnaire, which we obtained with the authors' consent from the website: [https://burnoutassessmenttool.be/start\\_eng/](https://burnoutassessmenttool.be/start_eng/), was translated from English into Slovak by three independent translators. The authors of this study then synthesized the translation into a final version, which was subjected to back translation. The back translation was sent to the original authors of the questionnaire, who approved it. We then conducted 5 interviews with teachers and, after correcting a few words, finalized the preliminary Slovak version, which is available at: [https://burnoutassessmenttool.be/start\\_eng/](https://burnoutassessmenttool.be/start_eng/).

### *Measures*

The Burnout Assessment Tool (BAT) consists of two parts – BAT-C a BAT-S. BAT-C consists of 23 items that measure core symptoms of burnout: exhaustion (eight items), mental distance (five items), emotional impairment (five items), and cognitive impairment (five items). BAT-S consists of 10 items that measure secondary symptoms of burnout: psychological distress (five items) and psychosomatic complaints (five items). Items are rated on a 5-point Likert scale from never (1) to always (5) (Schaufeli, De Witte & Desart, 2020).

We assessed job resources and job demands using selected scales from the Job Demands-Resources Questionnaire (JDR-Q) (Schaufeli, 2015). Job demands and job resources were surveyed through a number of items as follows:

**Table 1**

*Overview of the questionnaire items and their reliability*

Name	Number of Items	Reliability
Job Demands		
Quantitative Demands		
work overload	4	0,874
Qualitative Demands		
emotional mental and physical demands	3	0,517
work-life conflict	1	-
Organisational Demands		
role conflict	3	0,789
personal conflict	1	-
harrassment	4	0,623
bureaucracy	3	0,724
Job Resources		
Social Resources		
role clarity	3	0,927
team spirit	2	0,893

In addition, we measured job satisfaction, measured by one item, and job engagement, measured by 3 items, which have a reliability of  $\alpha = 0.804$  in our study.

Outcomes were measured by in-role performance, which was measured by 3 items and its reliability in our study is  $\alpha = 0.819$ , current job performance measured by one item and turnover intention was also measured by one item.

Job insecurity was measured using the Job Insecurity Scale, which measures qualitative and quantitative job insecurity (8 items in total) (Vander, De Witte & De Cuyper, 2014). The reliability of the quantitative job insecurity scale was  $\alpha = 0.294$ , the qualitative  $\alpha = 0.867$ . Due to the low reliability of quantitative job insecurity, we do not work with it in further analyses.

### 1.3 Data Analysis

First, we assessed the descriptive characteristics of the items (mean, standard deviation, skewness, kurtosis), the item-to-factor correlation corrected for item deletion, and Cronbach's alpha after deleting an item. Subsequently, we performed confirmatory factor analysis (CFA) using the JASP program. CFA is used in cases where the factor structure

of the research instrument has already been evaluated and researchers are testing the number of factors and their loadings on a different research sample.

To assess model fit, different fit indices were used: the  $\chi^2$  goodness-of-fit statistic; the root mean square error of approximation (RMSEA), the Tucker–Lewis index (TLI) and the comparative fit index (CFI). Values lower than 0.08 for RMSEA and higher than 0.90 for CFI and TLI indicated an acceptable fit to the data (Soukup, 2022).

Subsequently, we assessed the internal consistency for the BAT-C core symptoms and BAT-S secondary symptoms subscales using Cronbach's alpha coefficient.

We assessed construct validity through correlation analysis between burnout and selected factors of the JDR model.

## 2 Results

### 2.1 Descriptive Characteristics

Descriptive characteristics of core and secondary symptoms are presented in Table 1. We present mean scores, standard deviation, skewness, kurtosis, corrected item-to-factor correlations, and reliability. Corrected item-to-factor correlations ranged from 0.495 to 0.757 for core symptoms and from 0.403 to 0.770 for secondary symptoms. Reliability reached very good values for individual factors (from 0.741 to 0.893).

### 2.2 Confirmatory Factor Analysis

Confirmatory factor analysis was performed on three models: 1) One-factor model: This model included all 23 items and predicted one factor; 2) Four-factor model: This model allowed for the differentiation of four intercorrelated factors; 3) Second-order factor model: In this model, the four primary symptoms were predicted by one factor. This model is consistent with the view of burnout as a syndrome composed of four types of difficulties with a common denominator - burnout.

Table 2 displays the identified fit indicators. Based on these indicators, it can be said that models 2 and 3 have significantly better characteristics than the first-order model. The second and third models are very similar, with the second model slightly better, although the difference is small. Since the third model best corresponds to the theoretical view, we select it as the starting point. The path diagram for this model is visualized in Figure 1.

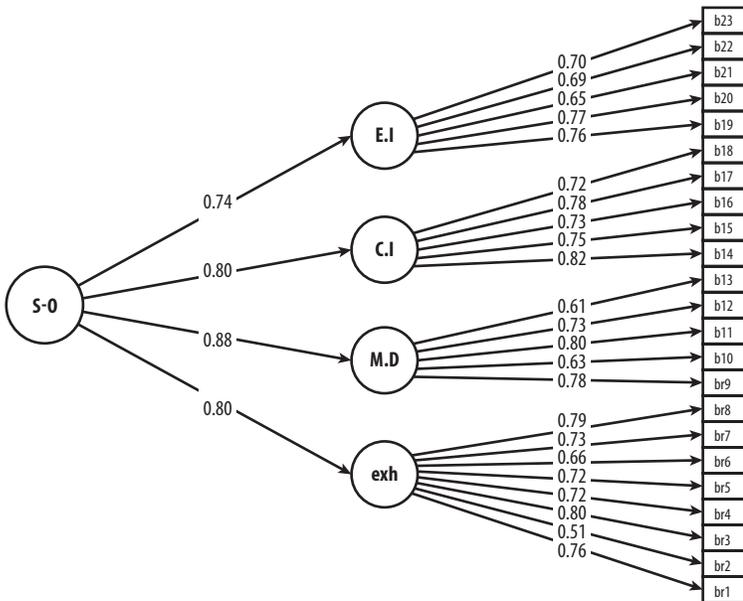
**Table 2**  
*Descriptive Statistics of BAT Core and Secondary Symptoms Items*

Core dimension/core symptom		<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>	<i>r</i> <sup>2</sup>	$\alpha^2$	$\alpha$
exhaustion	BAT_E1	2,82	0,869	-0,129	-0,366	0,705	0,876	0,893
	BAT_E2	3,23	0,874	-0,474	-0,091	0,495	0,896	
	BAT_E3	2,82	0,953	0,150	-0,284	0,757	0,871	
	BAT_E4	2,42	0,871	0,129	-0,481	0,696	0,877	
	BAT_E5	2,29	0,946	0,426	-0,327	0,685	0,879	
	BAT_E6	2,08	0,796	0,545	0,305	0,594	0,887	
	BAT_E7	2,23	0,823	0,494	0,076	0,698	0,878	
	BAT_E8	2,89	0,955	0,010	-0,514	0,744	0,872	
mental distance	BAT_MD1	1,951	0,894	0,804	0,161	0,646	0,776	0,819
	BAT_MD2	1,85	0,880	0,759	-0,254	0,559	0,804	
	BAT_MD3	1,36	0,688	2,054	4,345	0,706	0,760	
	BAT_MD4	1,27	0,550	2,103	4,131	0,685	0,778	
	BAT_MD5	1,46	0,773	1,966	4,455	0,550	0,802	
cognitive impairment	BAT_CC1	1,71	0,668	0,556	-0,049	0,742	0,833	0,871
	BAT_CC2	1,63	0,712	0,808	-0,138	0,655	0,854	
	BAT_CC3	1,83	0,764	0,852	1,026	0,695	0,845	
	BAT_CC4	1,73	0,712	0,825	1,077	0,711	0,840	
	BAT_CC5	1,80	0,638	0,545	1,488	0,688	0,846	
emotional impairment	BAT_EC1	1,65	0,651	0,654	0,181	0,667	0,790	0,833
	BAT_EC2	1,46	0,639	1,251	1,208	0,689	0,785	
	BAT_EC3	1,99	0,727	0,309	-0,255	0,583	0,814	
	BAT_EC4	1,53	0,707	1,473	3,218	0,585	0,813	
	BAT_EC5	1,69	0,676	0,621	-0,064	0,648	0,795	
secondary dimension/secondary symptom		<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>	<i>r</i> <sup>2</sup>	$\alpha^2$	$\alpha$
psychological distress	BAT_PD1	2,11	1,080	0,677	-0,398	0,590	0,861	0,863
	BAT_PD2	2,08	0,975	0,674	-0,166	0,770	0,810	
	BAT_PD3	2,43	0,981	0,347	-0,422	0,742	0,819	
	BAT_PD4	1,47	0,753	1,692	2,508	0,711	0,835	
	BAT_PD5	2,01	0,973	0,769	-0,029	0,635	0,847	
psychological	BAT_PC1	1,48	0,763	1,603	1,996	0,488	0,704	0,741
	BAT_PC2	1,67	0,899	1,301	1,145	0,535	0,684	
	BAT_PC3	2,11	0,981	0,614	-0,384	0,580	0,665	
	BAT_PC4	2,15	1,019	0,560	-0,513	0,531	0,688	
	BAT_PC5	2,09	0,744	0,512	0,600	0,403	0,730	

Note. Equation 1 *M* – mean, *SD* – standart deviation, *Skew* – skewness, *Kurt* – kurtosis, *r*<sup>2</sup> – corrected correlation,  $\alpha^2$  – Cronsbach's if item deleted,  $\alpha$  – Cronsbach's  $\alpha$

**Table 3**  
*Descriptive Statistics of BAT Core and Secondary Symptoms Items*

Model	$\chi^2$	df	CFI	TLI	RMSEA	RMSEACI <sub>90</sub>	AIC
1 1 factor	1083,160	250	0,728	0,701	0,118	0,111-0,125	11838,7242
2 4 factors	468,616	224	0,922	0,912	0,064	0,056-0,072	11236,198
3 second-order factor model	447,862	226	0,920	0,910	0,065	0,057-0,073	11241,445



**Figure 1**  
 Path diagram with standardized estimates of the factorial structure for BAT-23, core symptoms

Note. S-O – second order factor; E. I. – emotional impairment; C. I. – cognitive impairment; M. D. – mental distance; exh – exhaustion

### 2.3 Construct Reliability and Convergent and Discriminant Validity

The construct validity was assessed in relation to selected variables of the JDR model. The correlation coefficients are presented in Table 3. Based on the assessment of the correlation matrix, we can state that we have identified moderate to strong relationships in the expected direction.

Burnout and its factors positively (moderately to strongly) correlate with work overload, emotional, mental, and physical demands, role conflict, qualitative job insecurity, bureaucracy, work-life conflict. In a less strong positive relationship, they are also related to harassment, personal conflict, and turnover intention (intention to change jobs). In a negative moderately strong to strong relationship, burnout is related to work engagement and team spirit, and in a weaker negative relationship, it is also related to role clarity and job performance.

### 3 Discussion

The aim of the study was the pilot adaptation and validation of the BAT in the Slovak environment on a research sample of teachers. We performed item descriptive analysis, confirmatory factor analysis, reliability analysis, and investigated construct validity through correlation analysis. Based on the high factor loadings of the items, adequate internal consistency of the factors, and satisfactory fit index values, it can be stated that burnout is composed of its basic dimensions (exhaustion, mental detachment, reduced emotional control, and cognitive problems). The values of the factor loadings and fit indices also confirm the replication of the second-order latent factor model of burnout based on four latent components. This means that our model also supports the hypothesis that burnout should be viewed as a syndrome consisting of four types of difficulties with a common denominator - burnout.

The construct validity of the instrument was confirmed by identifying the expected relationships between the BAT subscales and the JDR model subscales. We can conclude that burnout syndrome is related to high level of work-overload (too much work in a short time in a distracting environment), emotional mental-physical demands, role conflict (incompatibility of requirements, lack of resources to meet requirements), bureaucracy, role unclarity (in competencies, in tasks, in expectations), work-life imbalance, working team (bad atmosphere in the team, bad feeling in the team), work performance (especially when an employee is not achieving targets, not meeting standards), qualitative job insecurity (worries about what the job will look like in the future, fears that it will change in a negative way), with a plan to change job, with the feeling that the employee is not receiving sufficient compensation for the effort he or she puts in, with job insecurity, harassment (sexual, mobbing, bossing, discrimination, threats) and with engagement (the employee does not feel interested or enthusiastic about his/her work). The relationship between burnout and engagement was examined primarily to verify discriminant validity, as engagement can be understood as a positive, fulfilling, affective-cognitive state of mind. Engaged employees tend to be active, devoted, and absorbed in their work, and have a sense of energetic and affective connection with their work (Vinueza-Solórzano et al., 2021; Bakker, Demerouti & Sanz-Vergel, 2023). Engagement is therefore considered the opposite of burnout, which is supported by the results of our study.

**Table 4**

Correlation coefficients between BAT-C and selected variables of the JDR

		exhaustion	mental distance	cognitive impairment	emotional impairment	psychological distress	psychological complaints	burnout
work overload	r	0,516**	0,388**	0,348**	0,291**	0,405**	0,370**	0,506**
	p	,000	,000	,000	,000	,000	,000	,000
	N	265	265	265	265	265	265	265
emotional mental-physical demands	r	0,387**	0,190**	0,158**	0,172**	0,256**	0,285**	0,327**
	p	,000	,002	,010	,005	,000	,000	,000
	N	265	265	265	265	265	265	265
role conflict	r	0,406**	0,453**	0,303**	0,323**	0,375**	0,375**	0,472**
	p	,000	,000	,000	,000	,000	,000	,000
	N	265	265	265	265	265	265	265
harassment	r	0,158**	0,273**	0,112	,058	0,203**	0,143*	0,203**
	p	,010	,000	,070	0,351	,001	,020	,001
	N	264	264	264	264	264	264	264
role clarity	r	-0,190**	-0,255**	-0,238**	-0,195**	-0,214**	-0,147*	-0,256**
	p	,002	,000	,000	,001	,000	,017	,000
	N	265	265	265	265	265	265	265
team spirit	r	-0,354**	-0,386**	-0,177**	-0,268**	-0,376**	-0,257**	-0,392**
	p	,000	,000	,004	,000	,000	,000	,000
	N	265	265	265	265	265	265	265
engagement	r	-0,447**	-0,515**	-0,349**	-0,320**	-0,358**	-0,284**	-0,484**
	p	,000	,000	,000	,000	,000	,000	,000
	N	265	265	265	265	265	265	265
In role performance	r	-0,219**	-0,242**	-0,221**	-0,202**	-0,240**	-0,115	-0,261**
	p	,000	,000	,000	,001	,000	,061	,000
	N	265	265	265	265	265	265	265
qualitative job insecurity	r	0,436**	0,344**	0,272**	0,364**	0,490**	0,319**	0,481**
	p	,000	,000	,000	,000	,000	,000	,000
	N	265	265	265	265	265	265	265
work-life conflict	r	0,489**	0,357**	0,395**	0,368**	0,477**	0,376**	0,530**
	p	,000	,000	,000	,000	,000	,000	,000
	N	265	265	265	265	265	265	265
personal conflict	r	0,221**	0,281**	0,206**	0,324**	0,257**	0,162**	0,299**
	p	,000	,000	,001	,000	,000	,008	,000
	N	264	264	264	264	264	264	264
current work performance	r	-0,049	-0,130*	-0,205**	-0,180**	-0,112	-0,078	-0,142*
	p	0,442	,040	,001	,004	,075	0,218	,024
	N	252	252	252	252	252	252	252
turnover intention	r	0,183**	0,248**	0,149*	0,284**	0,238**	0,153*	0,251**
	p	,003	,000	,015	,000	,000	,013	,000
	N	265	265	265	265	265	265	265
reciprocity	r	-0,224**	-0,210**	-,075	-0,122*	-0,195**	-0,181**	-0,225**
	p	,000	,000	,223	,047	,001	,003	,000
	N	265	265	265	265	265	265	265
red tape (bureaucracy)	r	0,408**	0,385**	0,297**	0,291**	0,327**	0,340**	0,437**
	p	,000	,000	,000	,000	,000	,000	,000
	N	264	264	264	264	264	264	264
job satisfaction	r	-0,356**	-0,449**	-0,306**	-0,350**	0,337**	-0,273**	-0,421**
	p	,000	,000	,000	,000	,000	,000	,000
	N	264	264	264	264	264	264	264

The results of our pilot study on the adaptation and validation of the BAT questionnaire are consistent with many studies from various countries around the world. Most of them followed a similar approach as ours, which is to test multiple models of the questionnaire's factor structure. The most common structures examined were a one-factor (unidimensional measure) structure, a structure with four intercorrelated factors, and a second-order model that assumes that all four subscales load onto a common higher burnout factor. In studies, the second-order model usually fit better, which corresponds to the BAT definition of burnout (Schaufeli & De Witte, 2023). This conclusion was reached among employees from Ecuador (Vinueza-Solórzano et al., 2021), Japan (Sakakibara, Shimazu, Toyama & Schaufeli, 2020), Greece (Androulakis et al., 2023), Austria, Finland, Flanders, Germany, Ireland, Netherlands (De Beer et al., 2020), the Czech republic (Kajzar, 2020). One important implication of these findings is that the factor structure of the BAT appears to be invariant across countries, and the factor loadings of the items are similar across countries (Schaufeli & De Witte, H., 2023). This suggests that the BAT has the potential to measure burnout reliably across countries, and thus to allow for valid international comparisons.

The BAT can be used for both research and clinical purposes. It can be a valuable tool for identifying employees who are suffering from burnout or who are at risk of burnout, and thus can provide a starting point for their identification and subsequent intervention or prevention.

Our pilot study focused on a research sample of teachers. The teaching profession is demanding due to long-term exposure to school-related stressors, making occupational health protection a crucial element. Especially in the current context of a teacher shortage in Slovakia and an unfavorable future outlook, we need a valid and reliable tool to contribute to the relevant assessment of the burnout risk level in the teaching profession and, subsequently, to implement adequate changes to eliminate these risks. The goal is to ensure the health of school employees, and for policymakers, up-to-date and refined tools for monitoring teacher health could be particularly useful.

A significant limitation of the study is the non-representativeness of the research sample. The use of convenience sampling increases the likelihood that individuals who experience lower levels of burnout will be more likely to participate in the research. Future studies should include a broader and more representative sample. The study was conducted with the support of the Vega agency, where the target research sample for validation was teachers in Slovakia. However, future research should also validate the BAT research tool on the general population with diverse characteristics, working in different fields, with different levels of education, under different working conditions and so on.

## Conclusion

The study focused on the pilot testing of the Burnout Assessment Tool (BAT) in the Slovak context using a sample of teachers. The "gold standard" tool for measuring burnout in many countries (including Slovakia) is the Maslach Burnout Inventory (MBI). However, this tool is not properly validated in Slovakia, the items are not standardized, there is no manual for evaluation, and studies using the MBI have yielded highly heterogeneous results. Additionally, the MBI has been criticized for not being based on a solid theoretical foundation, being outdated, being factorally unstable, and having a problematic "personal accomplishment" domain. Also in view of this, we decided to adapt and validate the promising Burnout Assessment Tool (BAT), which has already been validated in many countries. Our pilot study suggests that it is a factor-stable, valid, and reliable tool that has the potential to collect reliable data and offer opportunities for comparison with other countries. Our study primarily focused on teachers, but we consider it important and necessary to validate this tool on a representative sample of working people in Slovakia as well.

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## References

- Androulakis, G. S., Dimitra, A. G., Lainidi, O., Montgomery, A., & Schaufeli, W. B. (2023). The Greek burnout assessment tool: Examining its adaptation and validity. *International Journal of Environmental Research and Public Health*, 20(10), 5827. <https://doi.org/10.3390/ijerph20105827>
- Angelini, G., Buonomo, I., Benevene P., Consiglio P., Romano, L., & Florilli, C. (2021). The Burnout Assessment Tool (BAT): A contribution to Italian validation with teachers. *Sustainability*, 13(16), 9065. <https://doi.org/10.3390/su13169065>
- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands–resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, 10, 25–53. <https://doi.org/10.1146/annurev-orgpsych-120920-053933>
- Baranovská, A., & Doktorová, D. (2014). The need to create a cognitive structure for primary and secondary school teachers in relation to the degree of burnout and emotional intelligence.

- International Multidisciplinary Scientific Conference on Social Sciences and Arts*, 491–498. <https://doi.org/10.5593/sgemsocial2014B11>
- Bravo, D. M., Suárez-Falcón, J. C., Bianchi, J. M., Segura-Vargas, M. A., & Ruiz, F. J. (2021). Psychometric properties and measurement invariance of the Maslach Burnout Inventory–General survey in Colombia. *International Journal of Environmental Research and Public Health*, 18(10), 5118. <https://doi.org/10.3390/ijerph18105118>
- Čopková, R. (2021). The relationship between burnout syndrome and boreout syndrome of secondary school teachers during COVID-19. *Journal of Pedagogical Research*, 5(2), 138–151. <http://doi.org/10.33902/JPR.2021269824>
- Daniel, J., & Sarmány-Schuller, I. (2000). Burnout in teacher's profession: age years of practice and some disorders. *Studia Psychologica*, 42(1–2.), 33–41. [https://www.researchgate.net/publication/284511378\\_Burnout\\_in\\_teachers\\_profession\\_Age\\_year\\_of\\_practice\\_and\\_some\\_disorders](https://www.researchgate.net/publication/284511378_Burnout_in_teachers_profession_Age_year_of_practice_and_some_disorders)
- Deligkaris, P., Panagopoulou, E., Montgomery, A. J., & Masoura, E. (2014). Job burnout and cognitive functioning: A systematic review. *Work and Stress*, 28(2), 107–123. <https://doi.org/10.1080/02678373.2014.909545>
- Fričová, J., Kohútová, K., & Štefáková, L. (2020). Burnout syndrome in relation to the sensitivity of nurses, teachers and social workers. *Proceedings of CBU in Social Sciences*, 1, 44–52. <https://doi.org/10.12955/pss.v1.45>
- Fuchsová, K. & Hruščová, E. (2016). Syndróm vyhorenia u špeciálnych pedagógov. *Špeciálny pedagóg*, 5(2), 59–72. <https://www.unipo.sk/public/media/26527/%C5%A0peci%C3%A1lny%20pedag%C3%B3g%202016,%20ro%C4%8D.%205,%20%C4%8D.%202.pdf>
- Galanakis, M. (2009). Factorial structure and psychometric properties of the Maslach Burnout Inventory–Health Services Survey (MBI) in Greek midwives. *Europe's Journal of Psychology*, 4(4), 52–70. <http://doi.org/10.5964/ejop.v5i4.240>
- Green, D. E., Walkey, F. H., & Taylor, A. J. (1991). The three-factor structure of the Maslach Burnout Inventory: A multicultural, multinational confirmatory study. *Journal of Social Behavior and Personality*, 6(3), 453–472. <https://psycnet.apa.org/record/1992-11360-001>
- Juhásová A., (2011). Komparácia rizík vyhorenia v profesii zdravotnej sestry a učiteľa. *Logos polytechnikos*, 1(2), 48–55.
- Kajzar, A. (2020). Překlad a adaptace dotazníku vyhoření (BAT). Master thesis. 73. <https://is.muni.cz/th/m5v1o/>.
- MKCH-11 (2023). *Medzinárodná klasifikácia chorôb*. <https://www.nczisk.sk/standarty-v-zdravotnictve/pages/medzinarodna-klasifikacia-chorob-mkch-10.aspx>
- Mutair, A. A., Chagla, H., Alawam, K., Alsalman, K., & Ali, A. (2020). Examining and adapting the psychometric properties of the Maslach Burnout Inventory–Health Services Survey (MBI–HSS) among healthcare professionals. *Applied Sciences*, 20(5), 1890. <https://doi.org/10.3390/app10051890>
- Novocký, M., & Orosová, R. (2019). The relationship between professional reflection and burnout syndrome in secondary school teachers. *AD ALTA – Journal of interdisciplinary research*, 9(2), 251–260. <https://openurl.ebsco.com/EPDB%3Agcd%3A11%3A20015723/detailv2?sid=ebsco%3Aplink%3Ascholar&id=ebsco%3Agcd%3A141142518&cl=f>
- Oh, S. H., & Lee, M. (2009). Examining the psychometric properties of the Maslach Burnout Inventory–Health Services Survey with a sample of child protective service workers in Korea. *Children and Youth Services Review*, 31(2), 206–210. <http://doi.org/10.1016/j.childyouth.2008.07.012>
- Pisanti, R., Lombardo, C., Lucidi, F., Violani, C., & Lazzari, D. (2013). Pisanti, R. et al. (2013). Psychometric properties of the Maslach Burnout Inventory–Health Services Survey for human services among Italian nurses: A test of alternative models. *Journal of Advanced Nursing*, 69(3), 1365–2648. <https://doi.org/10.1111/j.1365-2648.2012.06114.x>

- Ráčzová, B., & Köverová, M. (2020). Konfirmačná faktorová analýza slovenskej verzie dotazníka MBHSS pre pomáhajúce profesie. *Československá psychologie*, 64(3), 272–287. <https://kramerius.lib.cas.cz/view/uuid:55e981bb-61bf-4923-a981-99e021e9efc8?article=uuid:e8a9507c-8082-4747-b2ac-8db1da62d0d7>
- Sakakibara, K., Shimazu, A., Toyama, H., & Schaufeli, W. B. (2020). Validation of the Japanese version of the Burnout Assessment Tool. *Frontiers in Psychology*, 11, Article 1819. <https://doi.org/10.3389/fpsyg.2020.01819>
- Schaufeli, W. B. (2015). Engaging leadership in the job demands-resources model. *Career Development International*, 20(5), 446–463. <https://doi.org/10.1108/CDI-02-2015-0025>.
- Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer & O. Hämmig (Eds.), *Bridging occupational, organizational and public health: A transdisciplinary approach* (pp. 43–68). Springer Science + Business Media. [https://doi.org/10.1007/978-94-007-5640-3\\_4](https://doi.org/10.1007/978-94-007-5640-3_4)
- Schaufeli, W. B., Desart, S., & De Witte, H. (2020). Burnout Assessment Tool (BAT) - Development, validity, and reliability. *International Journal of Environmental Research and Public Health*, 17(24), 24: 9495. <https://doi.org/10.3390/ijerph17249495>
- Schaufeli, W., & De Witte, H. (2023). Burnout Assessment Tool (BAT). In C. Krägeloh, M. Alyami, & O. N. Medvedev (Eds.), *International Handbook of Behavioral Health Assessment*. (pp. 1–24) Springer. [https://doi.org/10.1007/978-3-030-89738-3\\_54-1](https://doi.org/10.1007/978-3-030-89738-3_54-1)
- Schaufeli, W., De Witte, H., & Desart, S. (2020). *Manual Burnout Assessment Tool (BAT) – Version 2.0*. Belgium: Unpublished internal report.
- Schaufeli, W., Desart, S., & De Witte, H. (2020). Burnout Assessment Tool (BAT) – Development, validity, and reliability. *International Journal of Environmental Research and Public Health*, 17(24), 9495. <https://doi.org/10.3390/ijerph17249495>
- Slabšinskienė, E., Gorelik, A., Vasiliauskienė, I., Kavaliauskienė, A., & Zaborskis, A. (2020). Factorial validity and variance of the Maslach Burnout Inventory between demographic and workload groups among dentists of Lithuania. *International Journal of Environmental Research and Public Health*, 17(24), 9154. <https://doi.org/10.3390/ijerph17249154>
- Soukup, P. (2022). *Pokročilá analýza dát v SPSS a AMOS*. Masarykova univerzita.
- Vander, T. E., De Witte, H., & De Cuyper, N. (2014). The Job Insecurity Scale: A psychometric evaluation across five European countries. *European Journal of Work and Organizational psychology*, 23(3), 364–380. <https://doi.org/10.1080/1359432X.2012.745989>
- Vinueza-Solórzano, A. M. (2021). The Ecuadorian version of the Burnout Assessment Tool (BAT): Adaptation and validation. *International Journal of Environmental Research and Public Health*, 18(13), 7121. <https://doi.org/10.3390/ijerph18137121>

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