Research Article

Maslach Burnout Inventory – General Survey: Factorial validity and invariance among Romanian healthcare professionals[☆]

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ABSTRACT

This study tested the dimensionality of the Maslach Burnout Inventory – General Survey (MBI-GS) on a sample of 1190 Romanian healthcare professionals from three county hospitals. Data provided evidence to support the hypothesised three-factor model after removing one item from the cynicism scale: $\chi^2(86) = 432.29$, CFI = .94, GFI = .95, NFI = .93, and RMSEA = .05. Results of multigroup analysis confirmed the invariance of the 15 items model across professional role, gender, age, and organisational tenure. Structural equation modeling results proved specific relations between occupational factors and burnout dimensions. Our results have practical implications for future research on burnout using the MBI-GS among samples of healthcare professionals.

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1. Introduction

The use of translated instruments in different national or professional cultures in the absence of a systematic evaluation of their psychometric properties hampers cross-studies comparisons. The current research has two main objectives. First, it proposes to test the factorial validity and invariance of the Maslach Burnout Inventory – General Survey (MBI-GS) on a sample of 1190 Romanian healthcare professionals. We aim to test the invariance of the MBI-GS across professional role, gender, age, and organisational tenure. Second, specific relations between burnout dimensions and relevant occupational factors will be investigated by means of structural equation modeling.

1.1. Maslach Burnout Inventory

The most influential burnout definition describes burnout as a three dimensional construct composed of emotional exhaustion, depersonalisation, and professional efficacy (Maslach, Schaufeli, & Leiter, 2001). The standard measuring instrument (Schaufeli & Buunk, 2003) is the Maslach Burnout Inventory (MBI) which currently has three distinct versions in use. Early research on burnout described it as a syndrome characterising professions that involve demanding interpersonal interactions (Maslach et al., 2001). Thus the first two forms were addressed to healthcare professionals: Human Services Survey (MBI-HSS) (Maslach & Jackson, 1981, 1986) and teachers: Educators Survey (MBI-ES) (Maslach & Jackson, 1986). Both MBI-HSS and MBI-ES became widely used and their factorial validity has often been tested with studies offering divergent results. The MBI-HSS' three-factor structure has been validated on samples of healthcare professionals (Hallberg & Sverke, 2004) and social workers (Kim & Ji, 2009). Other studies reported findings of a two (Kalliath, O'Driscoll, Gillespie, & Bluedorn, 2000), or a five factors structure (Densten, 2001). Moreover, empirical data suggested that the initial three-factor structure had a better fit if some of the items were excluded (Poghosyan, Aiken, & Sloane, 2009; Schaufeli & Van Dierendonck, 1993; Vanheule, Rosseel, & Vlerick, 2007) or if some items were allowed to load on different dimensions than those hypothesised in the initial model (Gorter, Albrecht, Hoogstraten, & Eijkman, 1999). The three-factor structure of MBI-ES was confirmed in samples of primary (Gold, Roth, Wright, Michael, & Chin-Yi, 1992) and secondary education teachers (Schaufeli, Daamen, & Van Mierlo, 1994). Other studies found good fit for a two-factor model with emotional exhaustion and depersonalisation merged into one dimension (Holland, Michael, & Kim, 1994). Byrne's studies (Byrne, 1991, 1993, 1994) confirmed the

three-dimension model but recommended the exclusion of items 12 and 16.

The Maslach Burnout Inventory – General Survey (MBI-GS) (Schaufeli, Leiter, Maslach, & Jackson, 1996) was developed in response to two aspects: first, studies using MBI-HSS outside human service professions found different factorial structures (Densten, 2001; Leiter & Schaufeli, 1996); second, both researchers and practitioners became more interested in burnout among professional roles which did not necessarily involve demanding social interactions. Due to its non-specificity and universal applicability the MBI-GS was soon the most preferred version of MBI (Mäkikangas, Hätinen, Kinnunen, & Pekkonen, 2001). Compared to its previous forms the MBI-GS is shorter and slightly adapted in order to describe broader occupational contexts (Maslach, Leiter, & Schaufeli, 2008). The questionnaire has 16 items clustered in three scales which parallel those of the MBI-HSS and MBI-ES. The emotional exhaustion scale is the least changed and describes feelings of physical and emotional resource depletion. The cynicism scale was tailored to fit a broader range of professional roles than its MBI-HSS equivalent, depersonalisation. Thus it describes an impersonal and distant attitude towards one's job and not only towards recipients of one's work. The professional efficacy, termed personal accomplishment in MBI-HSS, describes feelings of achievement in one's work. High scores on the first two subscales and low scores on the third subscale indicate the presence of burnout (Maslach & Leiter, 2008).

The MBI-GS' three-factor structure was confirmed using cross-sectional (Bakker, Demerouti, & Schaufeli, 2002; Taris, Schreurs, & Schaufeli, 1999), longitudinal designs (Mäkikangas, Hätinen, Kinnunen, & Pekkonen, 2011), and among different occupational domains: healthcare (Qiao & Schaufeli, 2011; Shirom & Melamed, 2006), academic (Schaufeli, Salanova, Gonzales-Roma, & Bakker, 2002), or manufacturing (Kitaoka-Higashiguchil et al., 2004). Moreover, the three-factor model was found to be invariant across occupations (Langballe, Falkum, Innstrand, & Aasland, 2006; Maslach et al., 2008; Richardsen & Martinussen, 2005) and nations (Schaufeli et al., 2002; Schutte, Toppinen, Kalimo, & Schaufeli, 2000).

Regarding the relation between the three scales of MBI, initial studies by Maslach and Jackson (1981, 1986) showed that the three dimensions of MBI-HSS and MBI-ES are distinct and moderately correlated. These results were confirmed by a 45 studies review that used the two versions of the instruments (Worley, Vassar, Wheeler, & Barnes, 2008). The three scales of the MBI-GS were also found to be moderately correlated in samples of employees with diverse occupational roles (Taris et al., 1999), employees with job-related psychological health problems (Mäkikangas et al., 2011), and employees from different countries (Bakker et al., 2002; Demerouti, Bakker, Vardakou, & Kantas, 2003).

The aim of the present study is to assess the factorial structure of the Romanian version of the MBI-GS among healthcare professionals and test its invariance among organisational role, gender, age, and tenure. More specifically, we hypothesise that:

Hypothesis 1. The three-factor structure of the originally proposed MBI-GS has a superior fit over the one and two factor structures, respectively.

Hypothesis 2. The three dimensional structure is invariant across organisational role, gender, age, and tenure.

1.2. Burnout among healthcare professionals

Burnout is a response to the prolonged exposure to occupational stress which negatively affects the individuals, the organisations, and the healthcare service recipients (Maslach & Leiter, 2008). It is a pervading phenomenon affecting a variety of professional roles

such as medical personnel (Kiekkas, Spyratos, Lampa, Aretha, & Sakellaropoulos, 2010; Putnik & Houkes, 2011; Soler et al., 2008), teachers (Hakanen, Bakker, & Schaufeli, 2006), software developers (Singh, Suar, & Leiter, 2012), athletes (Jowett, Hill, Hall, & Curran, 2013), or lawyers (Tsai, Huang, & Chang, 2009). Recent studies point out that healthcare professionals share the highest burnout rates (Shanafelt et al., 2012). Physicians, residents, and nurses affected by burnout are more prone to substance misuse (Moustou, Panagopoulou, Montgomery, & Benos, 2010; Oreskovich et al., 2012), depression (Hakanen & Schaufeli, 2012), insomnia (Vela-Bueno et al., 2008) or high rates of suicidal thoughts (Shanafelt et al., 2011; Van der Heijden, Dillingh, Bakker, & Prins, 2008). Hospitals' performance is flawed by burnout due to increased turnover intentions (Leiter & Maslach, 2009), absenteeism (Davey, Cummings, Newburn-Cook, & Lo, 2009), or early retirement intentions (Linzer et al., 2001). Even more alarming are potential consequences that patients may suffer following treatment by burnt-out healthcare professionals. Results point out that burnout predicts suboptimal care behaviours (Shanafelt, Bradley, Wipf, & Back, 2002) and serious medical errors (Shanafelt et al., 2010).

The vast majority of burnout research has focused mainly on predictors, with studies highlighting occupational factors as strongest ones (e.g., Alarcon, 2011; Lee & Ashforth, 1996). The Job Demands Resources Model (JD-R model) (Demerouti, Nachreiner, Bakker, & Schaufeli, 2001) is the dominant approach in explaining the predictive role of occupational factors in burnout development. The models' core assumption delineates job characteristics as either requiring a sustained effort and thus having physical or psychological costs (i.e., demands) or sustaining goal attainment and optimal functioning (i.e., resources). Burdening demands and insufficient resources trigger an energy expenditure process with health impairment costs (i.e., burnout). Optimal resources prompt a motivational process which fosters positive outcomes (i.e., engagement, low cynicism). Both the energy consumption and the motivational processes received strong empirical support from cross sectional (Llorens, Bakker, Schaufeli, & Salanova, 2006), longitudinal (Hakanen, Schaufeli, & Ahola, 2008), and meta-analytic (Nahrgang, Morgeson, & Hofmann, 2011) studies among diverse occupational roles. Studies found that the dual process to employee wellbeing predict important organisational outcomes. High job demands were found to be the strongest predictors for health impairment and in turn, predicted medical absence, while optimal job resources predicted high dedication and low turnover intentions (Bakker, Demerouti, & Schaufeli, 2003). Moreover the model stipulates distinctive patterns of relations between particular job characteristics and burnout dimensions, with excessive job demands shaping exhaustion and inappropriate job resources favouring cynicism (Demerouti et al., 2001). More specific, the model assumes that job demands are most predictive of exhaustion while job resources are most predictive of cynicism and professional efficacy (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003). Studies confirmed that dealing with high workload under time pressure (Pisanti, van der Doef, Maes, Lazzari, & Bertini, 2011), caring for demanding patients (Escriba-Aguiar, Martin-Baena, & Perez-Hoyos, 2006), or having higher nurse-patient ratios (Gunnarsdottir, Clarke, Rafferty, & Nutbeam, 2009) affect healthcare professionals' emotional exhaustion. A lack of structural empowerment (Laschiger, Wong, & Grau, 2013) or social support (Prins, Hoekstra-Weebers, et al., 2007) contributes to healthcare professionals' cynicism.

Extensive literature highlighted that healthcare professionals' work is relentlessly overloaded, emotionally overwhelming, escalating their private life, and thus favouring burnout development (De Jonge, Le Blanc, Peeters, & Noordam, 2008; Shanafelt et al., 2012; Shirom, Nirel, & Vinokur, 2010; Xanthopoulou et al., 2007). A recent study pointed out that American physicians are significantly

more dissatisfied with work-life balance compared with the general working population (Shanafelt et al., 2012). Perceived workload, emotional job demands, and work–home interference (WHI) received confirmation as salient occupational burnout antecedents among healthcare professionals (Panagopoulou, Montgomery, & Benos, 2006) and other professional roles (Kinnunen, Feldt, Mauno, & Rantanen, 2010). A systematic review of burnout risk factors among European healthcare professionals listed workload, emotional demands, and negative work–home interference as salient occupational risk factors (Bria, Băban, & Dumitraşcu, 2012). Those results guided our decision to focus on the role of this particular occupational aspects in burnout. Based on the aforementioned JD-R model assumptions, the hypothesis are:

Hypothesis 3. Job demands (workload and emotional demands) and negative WHI are related positively with exhaustion and cynicism, and negatively with professional efficacy.

Hypothesis 4. Job demands and negative WHI explain more in exhaustion variance than in cynicism variance.

Hypothesis 5. The relations stipulated in Hypothesis 3 are invariant across professional role, gender, age, and organisational tenure.

1.3. The present study

Our first aim was to assess the factorial structure of the Romanian version of the MBI-GS among healthcare professionals. We used confirmatory factor analysis and tested the hypothesised three-factor model against all alternative one-factor and two-factor models. Construct validation was done by testing model's invariance across occupational position, gender, age, and tenure by means of multigroup analysis. Convergent validity was tested by investigating the role of job demands and negative WHI on burnout dimensions. Our second aim was to test the impact of specific job demands and negative WHI on burnout dimensions through structural equation modelling.

We opted for MBI-GS instead of MBI-HSS for two reasons. First, our sample included ancillary staff which does not have direct patient contact and the use of MBI-HSS in this case would be inappropriate. Second, validation studies offered more convergent results for MBI-GS than for MBI-HSS, suggesting that MBI-GS is a more robust instrument.

There are four major methodological and theoretical contributions that this study brings to the literature. Firstly, previous MBI-GS validation studies conducted on healthcare professional samples addressed mostly nursing personnel (Leiter & Schaufeli, 1996; Vanheule et al., 2007). In our study we collected data from a heterogeneous sample of certified physicians, residents, nurses, and ancillary healthcare personnel and tested if the data from the whole sample fits the three-factor model.

Secondly, although the MBI-GS model consistency has been previously tested across occupational groups (Kitaoka-Higashiguchi et al., 2004), nationality (Langballe et al., 2006), or time span (Taris et al., 1999), few studies reported results on the model's invariance across professional role, gender, age, or tenure in the organisation. Because answers may be based on a group's interpretation of the questionnaire, we went further and tested the model's invariance across more specific subgroups. This was an imperative step for us, as the work and workload of physicians, nurses, and ancillary staff differs substantially. We therefore tested the equivalence of MBI-GS across professional roles. We also investigated for possible gender, age, or tenure biases in healthcare professionals' representation of the questionnaire items.

Thirdly, in line with the JD-R models' assumptions, we tested specific relations of job demands and negative WHI with burnout dimensions. More specifically we assessed if occupational factors

shape exhaustion rather than cynicism. We carefully selected relevant occupational factors for the healthcare setting and especially for hospitals.

Fourthly, although previous research had confirmed specific links between occupational characteristics and burnout dimensions (Bakker, Demerouti, Taris, et al., 2003; Escriba-Aguiar et al., 2006; Gunnarsdottir et al., 2009; Pisanti et al., 2011), few tested these links' equivalence across different socio-demographic and occupational groups. Our study sheds an important light on existing literature by investigating if the hypothesised relations are invariant across professions, genders, ages or tenures.

2. Methods

2.1. Procedure and sample

The study was briefly presented via email to several hospital managers in Transylvania. After some of these managers have agreed to collaborate we contacted the medical care managers along with the heads of the medical wards and explained them the objectives of the study. With their help we distributed and collected the questionnaire answers in a hardcopy format. Data were therefore collected at three Transylvanian county emergency hospitals (two of them being teaching hospitals) between November 2011 and May 2012. To ensure the anonymity and confidentiality of the answers the questionnaires were distributed in envelopes and respondents were instructed to seal them after filling in their answers. Out of the 2084 questionnaires that were distributed 1190 were returned resulting a 57% response rate. The respondents' ages ranged between 22 and 68 years old ($M = 39.21$; $SD = 9.75$). The tenure in their current position ranged between six months and 43 years ($M = 11.30$; $SD = 9.22$). The majority of respondents were women (78.7%), nurses (62%), and worked in surgical wards (42%). The sample consisted of 169 physicians, 157 residents, 738 nurses, and 98 ancillary staff.

2.2. Measures

2.2.1. Burnout

Burnout was measured using the Maslach Burnout Inventory – General Survey (Schaufeli et al., 1996). The 16 items of the questionnaire are grouped into three scales. Exhaustion is identified through five items such as "*I feel burned out from my work*". The cynicism scale consists of five items, one of which is "*I have become less enthusiastic about my work*". The remaining six items compose the professional efficacy dimension. One such item is "*I feel confident that I am effective at getting things done*". All items are scored on a seven-point Likert scale, ranging from 0 ("*never*") to 6 ("*every day*").

2.2.2. Job demands

Workload and emotional demands were measured with the corresponding scales from the *Questionnaire on the Experience and Evaluation of Work* (QEEW) (Van Veldhoven, de Jonge, Broersen, Kompier, & Meijman, 2002). The scales are framed as questions about work characteristics and responses are given on a four-point frequency scale. Workload scale consists of 11 items (e.g. "*Do you have to work very fast?*") while emotional demands scale (e.g. "*Do you have contact with difficult clients or patients in your work?*") consists of seven items.

2.2.3. The negative work–home interference

The negative interference of work upon private life was measured with the corresponding scale from the Survey Work Home Interaction Nijmegen (SWING) (Geurts et al., 2005). The eight items of the scale are measured on a 4-point frequency scale (e.g. "*You*

have to work so hard that you do not have time for any of your hobbies*").

The questionnaires were translated from English into Romanian by two of the authors and then translated back into English by an independent translator. An expert panel discussion was organised in order to solve the issues that resulted in the process of translating and adapting the instrument.

2.3. Data analyses

Descriptive statistics indicated that the majority of professional efficacy and cynicism items have skewed distributions and univariate outliers caused by extreme values. Logarithmic transformations according to Fields' (2005, chap. 3) recommendations produced near-normal distributions and eliminated outliers.

The factorial validity of the MBI-GS was tested using confirmatory factor analysis (Byrne, 2010) with maximum likelihood estimation procedure in AMOS 18.0 software (Arbuckle, 2007).

The hypothesised model (model 2) included all the 16 items of the original version loading on three distinct factors. In order to verify the factorial structure of the questionnaire model 2 was tested against an alternative one-factor model (null model) and all three versions of two-factor models. The fit of the model to the data was assessed based on the values of multiple fit indices: the comparative fit index (*CFI*), Goodness-of-Fit Index (*GFI*), Normed fit Index (*NFI*), Akaike's information criterion (*ACI*), and root mean square error of approximation (*RMSEA*). *CFI*, *GFI*, and *NFI* values higher than 0.90 indicate a good fit of the data to the model and values higher than 0.95 are considered an excellent fit (Byrne, 2010). The majority of researchers consider that *RMSEA* values lower than 0.05 indicate a very good fit and values up to 0.08 signals a reasonable fit (Byrne, 2010). *AIC* is a comparative measure of fit with smaller values indicating a better fit. To compare the overall fit of tested models $\triangle \chi^2 (\triangle df)$ was computed.

We cross-validated the final model and tested for factorial equivalence across professional role, gender, age, and tenure. Factorial invariance involves testing and comparing different models that imposed successive restrictions on model parameters. We compared unconstrained models to models with (1) measurement weights (latent construct factor loadings) constrained to be equal and (2) structural weights (regression coefficients) constrained to be equal. Multiple group invariance is usually evidenced through two indices: $\triangle CFI$ and $\triangle \chi^2 (\triangle df)$. The difference between the *CFI* of the unconstrained model and each of the following models should be less than .010, while $\triangle \chi^2 (\triangle df)$ should not be significant. According to Cheung and Rensvold (Cheung & Rensvold, 2002) recommendations we used change in *CFI* to evaluate the difference between the models. Change in *CFI* was chosen over change in $\chi^2 (df)$ because χ^2 is highly sensitive to sample size and number of constraints (Brannick, 1995; Kelloway, 1995).

Based on the correlation coefficients we tested the relation between job demands and negative WHI with burnout dimensions by means of structural equation modeling analyses and tested the path models' invariance across the four subgroups: professional role, gender, age, and tenure. The three occupational factors (workload, emotional demands, and negative work–home interference) as well as burnout dimensions were allowed to correlate with each other.

3. Results

3.1. Descriptive statistics

Except cynicism, with an Alpha Cronbach coefficient of .67, all scales obtained internal consistency values higher than .70. Table 1

Table 1
Means (*M*), standard deviations (*SD*), Pearson correlations, and α Cronbach for burnout dimensions, job demands, and negative work–home interference of the transformed data.

	M	SD	α	1.	2.	3.	4.	5.
1. Exhaustion	.46	.22	.88					
2. Cynicism	.38	.19	.67	.41**				
3. Professional e.	.65	.17	.78	−.11**	−.11**			
4. Workload	1.74	.14	.73	.66**	.27**	.02		
5. Emotional d.	1.66	.21	.75	.46**	.17**	.02	.58**	
6. Negative WHI	.28	.14	.91	.30**	.13**	−.06*	.27**	.21**

Professional e., professional efficacy; Emotional d., emotional demands; Negative WHI, negative work–home interference.
* $p \le .05$.
** $p \le .01$.

displays the means, standard deviations, internal consistency, and correlation coefficients for the three burnout dimensions and occupational factors after the transformation of variables.

3.2. Confirmatory factor analyses

The fit indices for the hypothesised three-factor model (model 2) indicated an acceptable fit but significantly better than those of the two factor models (model 1a, model 1b, and model 1c), as shown by the $\triangle \chi^2 (\triangle df)$. The first hypothesis was thus confirmed. Results of the overall fit of the tested models are presented in Table 2. Inspection of standardised estimates signalled that item 13 ("*I just want to do my job and not be bothered*") from the cynicism scale had the smallest loading on the factor, with a standardised estimate of .21. All the other items had standardised estimates between .55 and .85. Inspection of modification indices suggested cross-loading of item 13 both on exhaustion and professional efficacy. This item did not load significantly on either latent factor of the alternative one- or two-factor models, with values ranging between −.11 and .22. The internal consistency of the cynicism scale increased from a Cronbach's alpha value of .67–.74 if item 13 was deleted. Examination of modification indices indicated improvement in the fit of the model if two residual errors were allowed to correlate. In consequence, model 3 consisted of 15 items and allowed the residual errors of items 14 ("*I doubt the significance of my work*") and 15 ("*I have become more cynical about whether my work contributes anything*") from the cynicism scale to correlate. The revised model had no cross-loadings (Fig. 1).

The fit indices for the revised model (model 3) suggested a good fit of the data to the model: $\chi^2(86) = 432.29$, *CFI* = .94, *GFI* = .95, *NFI* = .93, *AIC* = 500.29, and *RMSEA* = .05. Moreover, $\triangle \chi^2 (\triangle df)$ indicated a significantly improved fit of the data to the model than the 16-item model. The dimension with the highest factor loadings is exhaustion, ranging between .72 and .85. Cynicism had the lowest factor loadings, from .43 to .65.

3.3. Multigroup analysis of invariance

In the next step multigroup analyses were computed to test if the final model (model 3b) is invariant across professional role, gender, age, and tenure. The results of the multigroup analyses for all the tested subgroups indicated a good fit of the data to the model, thus Hypothesis 2 was confirmed. *CFI* values ranges between .93 and .94, *GFI* between .91 and .93 while *RMSEA* values ranges between .04 and .03, which all indicate a good fit of the data to the model. According to the differences in *CFI* which are all lower than or equal with .01, the factor loadings and paths coefficients of the final model are invariant across all four variables (professional role, gender, age, and tenure). Results are presented in Table 3.

Table 2
Indices of overall fit for the alternative factor structures of the MBI-GS: results of confirmatory factor analyses. Each model (two-factor models, model 2, and model 3) was compared with the null model (one factor).

	$\chi^2(df)$	RMSEA	CFI	GFI	NFI	AIC	$\mathbf{\Delta}\chi^2(\mathbf{\Delta}df)$
Null model (one factor)	3130.29 (104)	.15	.55	.67	.55	3194.22	
Two-factor models:							
Model 1a	1370.55 (103)	.10	.81	.85	.80	1436.55	1759.74 (1)[***]
Model 1b	2512.55 (103)	.14	.64	.71	.64	2578.55	617.74 (1)[***]
Model 1c	1809.52 (103)	.11	.75	.79	.74	1875.52	1320.77(1)[***]
Model 2 (three factors)	700.89 (101)	.07	.91	.92	.90	770.89	2429.4 (3)[***]
Model 3a (15 items)	602.95 (87)	.07	.92	.93	.91	668.95	2527.34 (17)[***]
Model 3b (final model)	432.29 (86)	.05	.94	.95	.93	500.29	2698(18)[***]

Note: χ^2, chi-square; *df*, degrees of freedom; *AIC*, Akaike's information criterion; *CFI*, comparative fit index; *GFI*, goodness-of-fit index; *NFI*, normed fit index; *RMSEA*, root mean square error of approximation.
Model 1a, items of exhaustion and cynicism collapsed into one dimension; model 1b, items of exhaustion and professional efficacy collapsed into one dimension; model 1c, items of cynicism and professional efficacy collapsed into one dimension; model 3a, 15 items model without correlating the errors of items 14 and 15.
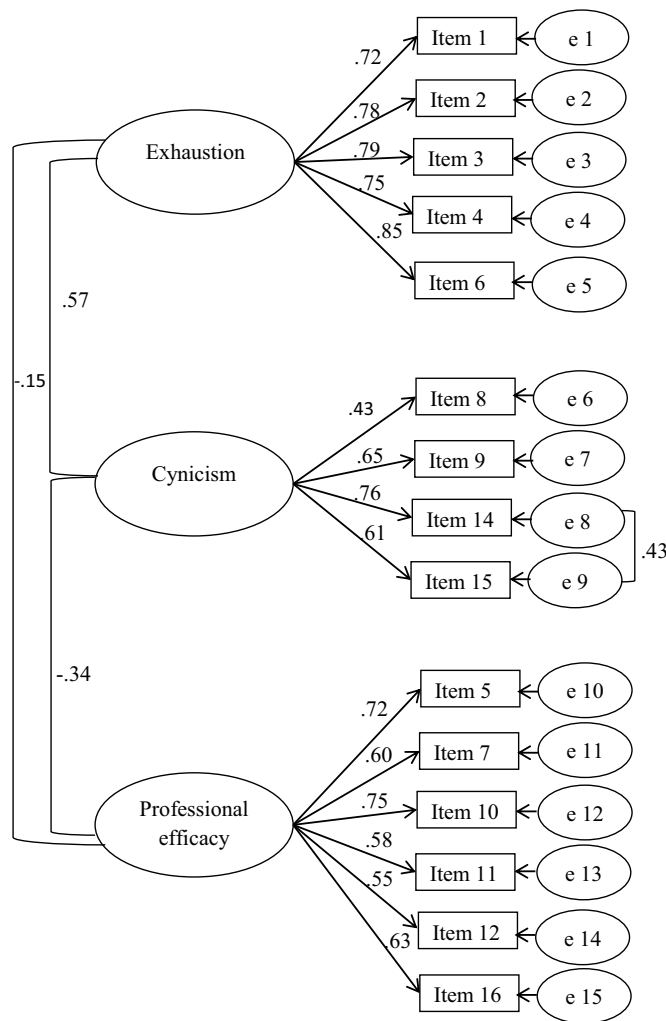[***] $p \leq .001$.

Fig. 1. Final model of factorial structure for the Maslach Burnout Inventory – General Survey (model 3). All factor loadings and covariances are significant at $p \leq .001$.

3.4. Structural equation modeling analyses

Results of the tested path model are presented in Fig. 2. According to the fit indices the model fits well to the data: *CFI* = 1.00, *GFI* = .99, *NFI* = .99, and *RMSEA* = .01. Hypothesis three was partially confirmed. First, standardised regression coefficients indicate that workload (β = .57, $p \leq .001$), emotional demands (β = .11, $p \leq .001$), and negative WHI (β = .12, $p \leq .001$) are direct positive antecedents

for exhaustion. Workload (β = .19, $p \leq .001$) and negative WHI (β = .08, $p \leq .01$) are direct positive antecedents for cynicism; negative WHI is a direct negative antecedent for professional efficacy (β = −.06, $p \leq .05$). Hypothesis four was confirmed as according to the squared multiple correlations workload, emotional demands, and negative WHI explain 47.4% of exhaustion variance, workload and negative WHI explain 6.4% of cynicism variance, and negative WHI explains 0.4% of professional efficacy variance.

Next multigroup analyses were computed to test if the path model is invariant across professional role, gender, age, and tenure. The results of the multigroup analyses for all the tested subgroups indicated a good fit of the data to the model. *CFI* and *GFI* values range between .99 and .97, while *RMSEA* values range between .00 and .03, which all indicate a good fit of the data to the model. According to the differences in *CFI* which are all lower than or equal with .01, the structural weights of the path model are invariant across all four variables (professional role, gender, age, and tenure) confirming hypothesis five; the structural residuals are invariant only across tenure. Results are presented in Table 4.

4. Discussion

The first aim of this research was to investigate the factorial validity of the Maslach Burnout Inventory – General Survey among a sample of Romanian healthcare professionals. Results confirmed the originally proposed three-factor structure with exhaustion, cynicism, and professional efficacy as distinct yet correlated dimensions.

Confirmatory factor analysis showed that the fit of the expected three-factor model obtained a significantly superior fit over one and two-factor models. Still, the hypothesised three-factor model proved a modest fit to the data. The analysis of modification indices suggested two improvements: (1) to eliminate item 13 of the cynicism' scale as it cross-loaded on exhaustion and professional efficacy scales and (2) to allow two residual errors to correlate. After introducing those two modifications, the model significantly improved as indicated by $\Delta\chi^2(\Delta df)$.

Correlations between the residual errors of the two items from the cynicism scale may be a result of their position in the questionnaire and thus the shared variance might be the result of their successive ordering. Other studies which confirmed the original three-factor model found an improved fit if correlations were allowed between residual errors (Langballe et al., 2006; Taris et al., 1999).

Item 13 asked the respondents to rate how frequently they wish to do their work without being bothered. Also, results indicated that the revised 15-items model obtained a significantly superior fit of the data to the other tested models based on $\mathbf{\Delta}\chi^2(\mathbf{\Delta}df)$.

Table 3
Testing the equality of the factor loadings and the paths between the latent factors of the final MBI-GS model for professional role, gender, age, and tenure; N = 1190.

		χ^2	df	CFI	GFI	NFI	RMSEA
Professional roles	Free parameters	667.39	258	.93	.92	.90	.03
	Equal factor loadings	721.55	282	.93	.92	.89	.03
	Equal covariances	754.08	294	.93	.91	.89	.03
Gender	Free parameters	547.77	172	.94	.93	.92	.04
	Equal factor loadings	584.65	184	.94	.93	.91	.04
	Equal covariances	591.36	190	.94	.93	.91	.04
Age	Free parameters	620.31	258	.94	.93	.91	.03
	Equal factor loadings	663.71	282	.94	.92	.90	.03
	Equal covariances	709.34	294	.93	.92	.89	.03
Tenure	Free parameters	629.67	258	.94	.93	.90	.03
	Equal factor loadings	683.73	282	.93	.92	.90	.03
	Equal covariances	727.11	294	.93	.92	.89	.03

Note: χ^2, chi-square; *df*, degrees of freedom; *CFI*, comparative fit index; *GFI*, goodness-of-fit index; *NFI*, normed fit index; *RMSEA*, root mean square error of approximation. Professional role categories: physicians, nurses, and ancillary staff. Age categories: up to 30 years, between 31 and 45 years, and over 46 years. Tenure categories: less than 10 years, between 11 and 25 years, and over 26 years of experience.
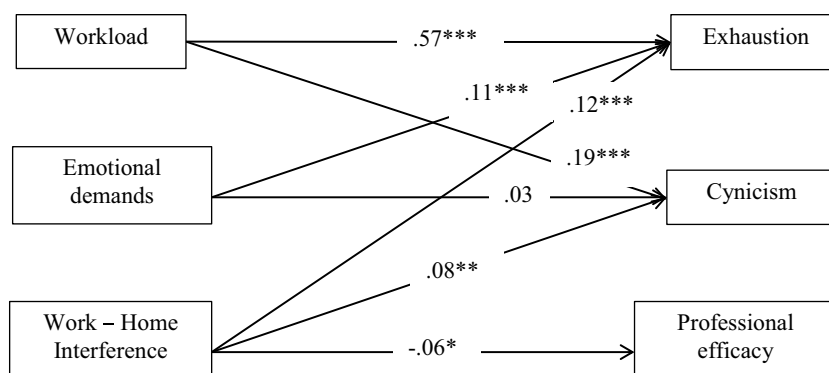

Fig. 2. Results of structural equation modeling analyses for testing the relation between occupational factors (workload, emotional demands, and negative WHI) and burnout dimensions: standardised regression coefficients.

Table 4
Testing the paths models' invariance across professional role, gender, age, and tenure; N = 1190.

		χ^2	df	CFI	GFI	NFI	RMSEA
Professional roles	Free parameters	10.19	6	.99	.99	.99	.02
	Structural weights	30.07	20	.99	.99	.98	.02
	Structural residuals	97.11	44	.96	.97	.94	.03
Gender	Free parameters	2.93	4	1.00	.99	.99	.00
	Structural weights	22.72	11	.99	.99	.98	.03
	Structural residuals	58.80	23	.97	.98	.96	.03
Age	Free parameters	5.11	6	1.00	.99	.99	.00
	Structural weights	27.05	20	.99	.99	.98	.01
	Structural residuals	78.18	44	.97	.97	.95	.02
Tenure	Free parameters	4.63	6	1.00	.99	.99	.00
	Structural weights	24.28	20	.99	.99	.98	.01
	Structural residuals	46.08	44	.99	.98	.97	.00

Note: χ^2, chi-square; *df*, degrees of freedom; *CFI*, comparative fit index; *GFI*, goodness-of-fit index; *NFI*, normed fit index; *RMSEA*, root mean square error of approximation. Professional role categories: physicians, nurses, and ancillary staff. Age categories: up to 30 years, between 31 and 45 years, and over 46 years. Tenure categories: less than 10 years, between 11 and 25 years, and over 26 years of experience.

Our results are congruent with previous studies which recommended the exclusion of this item because it tended to load on more than one factor (Richardsen & Martinussen, 2005). Schutte and collaborators (Richardsen & Martinussen, 2005) consider the item ambivalent, as it may indicate in the first place disengagement and social isolation from work colleagues. At the same time it may suggest strong motivation and engagement, as the employee may be focused on the task and would not welcome interruption. To the current results which indicate that the item is not specific for burnout adds a specificity of the Romanian healthcare system. As almost 60% of responses to this item were "every

day" and "a few times a week" we consider that this pattern indicates a generalised reaction among Romanian healthcare professionals to the frequent legislative changes. In the last twenty years, the Romanian healthcare system has been confronted with a never ending transition and reform, without continuity or clear objectives (Todorova, Băban, Alexandrova-Karamanova, & Bradley, 2009; Vlădescu, Scîntee, Olsavszky, Allin, & Mladovsky, 2008). The Healthcare Ministry has the highest turnover rate among Romanian ministries; there have been 25 ministerial changes since 1989 (Romanian Health Ministry, 2013). As a result, the work experiences and the professional needs of medical staff across the country

are continuously stretched by the frequent political and organisational changes. A recent qualitative study describes how the socio-economic and political instabilities impact healthcare professionals' daily work and shape a culture of learned helplessness among them (Spânu, Băban, Bria, & Dumitrașcu, 2012).

Furthermore we tested models' invariance across different occupational and demographic subgroups. Results confirmed that each subgroup obtained a good fit and that the model preserves the same structure across professional role, gender, age, and tenure. This indicates that the items' loadings on the three factors are not sensitive to the above-mentioned variables, thus suggesting that healthcare professionals attach the same meaning to the three burnout dimensions. Previous studies focused rather on studying MBI-GS' invariance across occupations (Kitaoka-Higashiguchil et al., 2004) or nations (Langballe et al., 2006) and not across socio-demographic or occupational factors for specific professional roles. Measurement variance across sub-samples of healthcare professionals was found for MBI-HSS (Vanheule et al., 2007), where burnout dimensions were perceived differently by nurses from varied occupational settings.

And lastly we examined the Romanian translation of the MBI-GS by relating the three burnout dimensions to relevant occupational predictors. In line with the JD-R model assumptions (Demerouti et al., 2001) our research confirmed that workload, emotional demands, and negative work–home interference are important burnout predictor. Moreover results indicate that there are specific relations between occupational factors and burnout dimensions as occupational factors are stronger antecedents for exhaustion than for cynicism. Both perceived workload and negative WHI contribute to exhaustion and cynicism while emotional demands are antecedents only for exhaustion. Hypothesis three was partially confirmed, as professional efficacy was explained only by negative WHI, and that cynicism is modestly explained by workload and negative WHI. Results strongly confirmed hypothesis four, as job demands and negative WHI have a strong impact on exhaustion and a more discrete impact on cynicism. We found that emotional demands have no significant impact on cynicism. Other studies with similar results confirmed the salient role of job demands, and thus of emotional demands in shaping exhaustion and the insignificant role of emotional demands in shaping cynicism (Bakker, Demerouti, Taris, et al., 2003). Quantitative job demands predict both exhaustion and depersonalisation among a sample of oncology healthcare providers while emotional demands (death and dying) predict only exhaustion (Le Blanc, Bakker, Peeters, van Heesch, & Schaufeli, 2001). Professional efficacy is explained modestly only by negative WHI. These results might indicate, as previous studies suggested, (Bakker, Demerouti, & Verbeke, 2004) that professional efficacy develops differently from the other two burnout dimensions and that other occupational factors contribute to professional efficacy. Results of multigroup analysis confirmed the path models' invariance across professional role, gender, age, and tenure (Hypothesis 5) indicating that the tested relations are not sensitive to the occupational and socio-demographic variables included in research. By confirming the invariance of the relation between occupational characteristics and burnout dimensions to socio-demographic and occupational groups our study fine-tunes the existing burnout literature among healthcare professionals. It highlights that the same occupational characteristics shape burnout regardless of the differences between the occupational setting physicians and nurses face, for example.

Empirical studies established that quantitative (e.g. workload, extended work hours) and qualitative demands (e.g. emotionally laden work situations, work–home interference) are important markers for healthcare professionals' burnout and indirectly for decayed quality of care (Bakker et al., 2004; Le Blanc et al., 2001; Prins, Gazendam-Donofrio, et al., 2007; Shanafelt et al., 2010; Shirom & Nirel, 2006). Romanian healthcare professionals reported high rates of burnout and work–home interference (Bria, Băban, Andreica, & Dumitrașcu, 2013; Voicu, 2006). Qualitative studies described those high rates as the consequences of constant legislative changes, scarcity of resources, health system reputation, and lately an increasing emigration of workforce (Popa, 2013; Spânu et al., 2012).

4.1. Limitations and recommendations for practice and future research

This study has several limitations. First, due to self-reported measures results may be biased by common method variance and thus the strength of the tested relations might have been artificially inflated. Future studies could overcome this shortcoming by using objective rather than subjective measures, as recommended by Podsakoff, MacKenzie, Lee, and Podsakoff's (2003).

Second, the generalizability of our results to other healthcare settings or to the Romanian healthcare professionals' community is hindered by the selection bias. Although we addressed this issue by sampling participants from different hospitals and cities the research sample does not meet the requirements for a representative one of the Romanian healthcare professionals. We could not investigate the differences between responders' and non-responders' answers thus we don't know if and how the selection bias might have influenced the results.

Third, although we focused on selecting the most relevant occupational characteristics for burnout development among healthcare professionals there are other variables which might favour burnout, such as cognitive demands. Physicians' work is characterised by cognitively charged tasks which may have either deleterious or challenging effects in the long run (Bakker, Demerouti, & Schaufeli, 2005; Bakker, ten Brummelhuis, Prins, & van der Heijden, 2011). Future studies might disentangle the role of cognitive demands in healthcare professionals' well-being. Also because the current research focused on testing the energetic process of the JD-R model, the motivational process and thus job resources were not included in the research design.

Forth, due to the cross-sectional design we may not imply causal relations between the studied variables.

To sum up, the study brings data to support the originally proposed three-factor model of burnout and the models' invariant structure across different demographic and occupational factors. The present results have practical implications for future research on burnout using the MBI-GS among samples of healthcare professionals. Our factorial validity results might encourage the use of MBI-GS in burnout research among Romanian healthcare professionals. Results about the relation between occupational factors and burnout dimensions are informative for burnout prevention and intervention programmes among healthcare professionals.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

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