

TESTING FOR THE DIMENSIONALITY OF THE MASLACH BURNOUT INVENTORY (MBI) ON A SAMPLE OF HIGH SCHOOL TEACHERS

Palmira Faraci

Abstract

Objective: Much research has broadly examined the dimensionality of the Maslach Burnout Inventory (MBI; Maslach and Jackson 1981) but yielding inconsistent and conflicting results. An understanding of the factorial composition of the MBI is crucial when the instrument is used to screen for burnout syndrome. In line with this need, the present study is aimed at determining the most psychometrically sound representation of the structure of burnout among a sample of high school teachers.

Method: Principal axis factoring exploratory factor analysis and least square confirmatory factor analysis were performed to identify the underlying factorial structure on a whole sample of 309 participants. Random data parallel analysis was conducted to determine the number of factors to retain.

Results: According to some previous research (Densten 2001, Firth et al. 1985), findings highlighted a four-factor structure model: “Personal Accomplishment”, “Strain”, “Depersonalization”, and “Frustration”. Two items failing to meet the retention criteria were not retained, resulting in a 20-item scale.

Conclusions: This emerging solution presents some differences compared to traditional structure. Emotional Exhaustion separated into two factors: “Strain”, referring to feelings of being emotionally drained and burned out from work, and “Frustration”, referring to feeling of stress and frustration about working with people. Limitations and need for future research avenues are discussed.

Key words: burnout, MBI, Maslach Burnout Inventory, teachers, factorial structure, personal accomplishment, depersonalization

Declaration of interest: none

Palmira Faraci

Faculty of Human and Social Sciences - University of Enna “Kore”, Cittadella Universitaria – 94100 Enna, Italy

Corresponding author

Palmira Faraci

E-mail: palmira.faraci@unikore.it; palmirafaraci@gmail.com

Phone number: 0039 0935 536536

Introduction

While burnout does not appear in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatry Association 2013), in the 10th edition of the International Classification of Diseases (ICD-10) burnout has been identified as a factor influencing health status and contact with health services and defined as a state of vital exhaustion (World Health Organization 1992).

Several different kinds of instruments have been proposed to measure burnout. However, a number of inventories have been employed exclusively in a single study or have been investigated empirically only occasionally, whereas other scales cannot be used across different occupational groups. A intensively studied psychometrically burnout questionnaire is the Burnout Measure (BM; Pines and Aronson 1988), consisting of 21 item referring to exhaustion with a 7-point rating scale, ranging from “never” to “always”. According to the test authors, burnout is defined as “a state of physical, emotional and mental exhaustion caused by long-term involvement in situations that are emotionally demanding” (p. 9). The BM appears to be a reliable instrument, but psychometric findings were

obtained with nonrandom samples and valid norms are lacking. In addition, despite the multidimensional definition by the test authors, the BM is conceived as a one-dimensional scale reducing a complex psychological phenomenon to the mere individual’s level of exhaustion.

Although several burnout measures were developed in the last decades, the only one that assesses all three dimensions is the Maslach Burnout Inventory (MBI; Maslach and Jackson 1981). The MBI is the most widely used self-report measure of burnout “as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with people in some capacity” (Maslach et al. 1996, p. 4). A large body of literature suggests that it exhibits good convergent and discriminant validity when compared with measures of job satisfaction, depression, and self-esteem. In addition, it shows satisfactory internal consistency ($\alpha=.90$, $\alpha=.79$, $\alpha=.71$) for Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA), respectively (Maslach and Jackson 1986). Although the scale reliability and validity in different cultural contexts as well as in different samples is extensively established, however its factorial structure

stability seems still questionable (Lee and Ashforth 1990, Boles et al. 2000).

An understanding of the factorial composition of the MBI is crucial when the instrument is used to screen for burnout syndrome. In line with this need, previous research has broadly examined the dimensionality of the questionnaire but yielding inconsistent and conflicting results. Various factor solutions have been identified. Some researchers have presented evidence for a bidimensional structure (Galanakis et al. 2009, Green et al. 1991, Walkey and Green 1992), other studies have found a three-factor structure (Byrne 1993, Holland et al. 1994, Kokkinos 2006), further research has highlighted four dimensions (Firth et al. 1985, Golembiewski et al. 1983, Iwanicki and Schwab 1981), and other findings indicated five dimensions of the construct (Densten 2001).

Based on the responses of 176 Irish social workers, 200 nurses from the UK, 223 businessmen from Estonia, USSR, and 226 nurses from New Zealand, Green et al. (1991) provided support for a replicable 2- and 3-factor structure, with the 2-factor solution including a substantial general factor underlying the Emotional Exhaustion and Depersonalization subscales. The principal component analysis with varimax rotation, conducted by Galanakis et al. (2009) amongst a sample of 536 professional health specialists in Greece, indicated a dual factor composition with the predominance of Emotional Exhaustion as a single primary factor, and Depersonalization as a secondary factor. Using six independent sets of data involving a variety of participants, Walkey and Green (1992) also found evidence for two replicable factors, the larger of which was defined as the “Core of Burnout” and the second factor was identified as Personal Accomplishment. Byrne (1993) tested for the factorial validity of MBI using confirmatory factor analyses (CFA) on the responses of elementary, intermediate, and secondary school teachers. Although her findings partially supported a 3-factor structure, they also highlighted poor psychometric properties for some items, recommending the need for a retesting of content validity and cross-validation studies across further independent samples. Similarly to the study by Byrne (1993), Boles et al. (2000) performed CFAs and a series of measurement invariance tests with elementary and high school teachers, obtaining fit indexes inadequate to confirm the three-factor model. Holland et al. (1994) compared the two- and three-factor orthogonal and oblique models in a sample of 150 middle school teachers. Confirmatory factor analyses with maximum likelihood estimation methods yielded the better fit for the oblique three-factor structure, although the two-factor oblique model afforded nearly as close a degree of fit as that afforded by the three-factor oblique model. Kokkinos (2006) used both principal component analysis with varimax rotation technique and maximum likelihood confirmatory factor analysis on a sample of 771 Greek Cypriot elementary and secondary school teachers and provided support for the three-factor structure of burnout. Firth et al. (1985) study on MBI factor structure for British nursing staff interpreted two factors from the Emotional Exhaustion scale, suggesting that feelings of being ‘emotionally drained’ were distinct from feelings of ‘frustration and discouragement about work.’ Iwanicki and Schwab (1981) performed a principal axis factor analysis with varimax rotation with a sample of teachers. The outcomes showed that Depersonalization separated into two factors labeled job-related and student-related factors. Densten (2001) provided support for the 5-factor

structure of the MBI, where both Emotional Exhaustion and Personal Accomplishment split into two subscales each, namely *psychological* and *somatic* strain for EE and *self-accomplishment* and *working with others* for PA, while DP remained a single dimension.

Based on this framework, there clearly remains some doubts as to the accurate nature of the factor structure of the MBI. Thus, in line with much earlier research suggesting the need to test the factor structure stability across cultures and samples of commonly used instruments in several fields of psychological research (Craparo et al. 2015, 2017; Faraci and Tirrito 2013; Triscari et al. 2011; Schimmenti 2016), we consider valuable to report further observed data regarding the evaluation of the psychometric properties of the MBI.

Specifically, what is needed is empirical evidence concerning the MBI underlying dimensionality. To this end, the current study examined the factor structure of the scale within a sample of high school teachers. Our methodological strategy was to conduct an exploratory factor analysis on a first random subsample and then to use confirmatory factor analyses on a randomly selected second subsample to check the model emerging from the exploratory factor analysis results (Misuraca et al. 2015, Perdighe et al. 2015, Faraci and Cannistraci 2015).

The decision to test the structural validity of this well-known inventory in this specific sample of participants is based on recognition of teaching as an especially stressful occupation. Teachers can be affected by many work-related stressors, among which problems with students, such as low interest and motivation in studying and, consequently, the lack of discipline in classroom, problems associated with school structure, such as lack of technical and administrative support, conflicts with colleagues and supervisors, complexity of the contact with pupils’ parents, overload, continuous needs of keep up with the times, inadequacy of salary, time pressure, scanty social recognition, few resources, and limited professional opportunities. In such a complex and challenging context, teachers may risk dissatisfaction from work, occupational distress and burnout. Based on the need to adequately measure burnout in teaching professions, the present research is mainly aimed to find a proper fit of the MBI dimensional structure to the psychological assessment of high school teaching populations in Italy.

Methods

Participants and procedure

Of the 331 recruited high school teachers, 22 had one or more items with missing values and were not included in data analyses. Thus, participants totalled 309 (29.6% male and 70.4% female) with a mean age of 45.59 years ($DS=8.51$, range: 27-65 years). The most frequent marital status was married (67.7%), followed by single (27.6%), and separated (4.7%). Mean of years of service was 17.12 years ($DS=9.85$, range: 1-40 years).

Exploratory factor analysis was conducted on a first random subsample of 155 participants, 34.4% men and 65.6% women, with a mean age of 45.31 years ($SD=8.34$, range: 27-65 years). The most frequent marital status was married (67.8%), followed by single (27.7%), and separated (4.5%). Mean of years of service was 16.41 years ($DS=10.18$, range: 1-40 years).

Confirmatory factor analysis was conducted on a second randomly selected 154 participant subsample,

24.1% men and 75.9% women, with a mean age of 45.92 years ($SD=8.73$, range: 27-64 years). The most frequent marital status was married (67.6%), followed by single (27.4%), and separated (5%). Mean of years of service was 17.73 years ($DS=9.55$, range: 1-36 years).

Participation was completely voluntary. The headmaster's approval to administer the instrument was obtained. The test was administered individually and anonymously during the class break by trained examiners in a schools' proper room. Respondents were asked to rate the degree to which each item accurately described their emotions and thoughts about their job. Questionnaire administration took approximately ten minutes. Teachers were included in the study conditional on a minimum of one year of service.

Instrument

The Maslach Burnout Inventory (MBI) is a self-report measure of burnout, consisting of 22 statements, on a 7-point Likert-type scale ranging from 0 (never) to 6 (every day), about work-related attitudes and feelings assumed to characterize psychological burnout (Maslach and Jackson 1981). The questionnaire is divided into three subscales: *Emotional Exhaustion* (EE, 9 items; e.g., "I feel emotionally drained from my work"); *Depersonalization* (DP, 5 items; e.g., "I feel I treat some recipients as if they were impersonal objects"); and *Personal Accomplishment* (PA, 8 items; e.g., "I have accomplished many worthwhile things in this job"). Higher EE scores indicate greater feelings of fatigue and being drained; higher DP scores denote greater tendency toward dehumanization and cynical, callous, and uncaring attitudes toward people for whom one provides his/her service, care, treatment, or instruction; higher PA scores refer to higher feelings of competence and successful achievement, whereas lower PA scores involve higher attitude of inefficacy and reduced motivation. The Italian reliability, construct, and criterion validity of scores on the MBI have been well established in various samples of workers (Sirigatti et al. 1988; Sirigatti and Stefanile 1991, 1992, 1993).

Data analyses

Data were analyzed with SPSS Statistics 17.0. A preliminary inspection of the item distribution was conducted to assess the extent to which 22 items-MBI could be factor analyzed using normal-theory estimation procedures. The distributional properties of each item were examined by inspecting both skewness and kurtosis. The normality of data was checked through Kolmogorov-Smirnov and Shapiro-Wilk tests.

Data were inspected to ensure items were significantly correlated, using Bartlett's Test of Sphericity, and shared sufficient variance, using Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy to evaluate whether items share sufficient variance to justify factor extraction. Principal Axis Factoring Exploratory Factor Analysis (PAF-EFA) using oblique rotation strategy (promax) was performed to identify the underlying factorial structure of the questionnaire. Random data parallel analysis was performed to determine the number of factors to retain (O' Connor 2000). Both Kaiser-Guttman root one criterion and the scree test were checked for agreement. A factor loading of at least .30 on the primary factor, a difference of .30 between loading on the primary factor and loading on other factors, and a minimum of three items for

each factor were used as criteria of item selection (Tabachnick and Fidell 1996). The Pearson product-moment correlation was used to measure the strength of association between factor scores.

Internal consistency reliability was described using Cronbach's alpha. Corrected item-scale correlations were examined for each factor. The minimum acceptable item-total correlation to consider the item appropriate for each subscale should be .40 (De Vellis 2003).

Least Square estimation Confirmatory Factor Analysis (LS-CFA) was performed, using the EQS Structural Equation Program (Bentler 2006), to evaluate the closeness of the hypothetical model of MBI to the empirical data of interviewing rating scores. Several goodness-of-fit indexes were used to verify whether the fit is adequate to support the model: the ratio of the chi-square to degrees of freedom (χ^2/df), the Non-Normed Fit Index (NNFI), the Comparative Fit Index (CFI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). NNFI and CFI values of .95 or greater and SRMR and RMSEA values of .05 or less are interpreted as evidence of goodness-of-fit (Hu and Bentler 1999).

Results

The two subsamples of participants were compared with regard to demographic characteristics. Chi square test and Student's independent samples *t*-test were used to evaluate differences in the distribution of gender, age, and years of service between the two groups. The two sets of data are comparable in terms of gender (Kolmogorov-Smirnov $Z=.879$, $p=.422$), age ($t=-.592$, $df=281$, $p=.554$), and years of service ($t=-1.056$, $df=250$, $p=.292$).

Item analysis

Table 1 gives item characteristics for both examined subsamples, including mean, standard deviation, skewness, kurtosis, Kolmogorov-Smirnov and Shapiro-Wilk tests of normality.

The mean values of the MBI 22-items ranged from 1.27 to 5.30 for the first random subsample and from 1.38 to 5.27 for the second random subsample.

The univariate skewness values ranged from -2.01 to 3.95 for the first random subsample and from -1.82 to 2.82 for the second random subsample, and the univariate kurtosis values ranged from -1.22 to 18.84 for the first random subsample and from -1.16 to 8.21 for the second random subsample, thus suggesting that some items deviated from a normal distribution.

The statistical significance of both Kolmogorov-Smirnov and Shapiro-Wilk tests of normality revealed that each item had a distribution that was significantly different from normal and, as a result, suggested that estimation procedures that assume a normal distribution may not be appropriate for examining the underlying factor structure of the MBI (Bollen 1989, Nunnally and Bernstein 1994). Based on these findings, principal axis factoring method was chosen for exploratory factor analyses, and maximum likelihood robust estimation procedures was applied for confirmatory factor analyses.

Exploratory factor analysis

Exploratory factor analysis was conducted with the first dataset for investigating the factor structure of the

Table 1. Item analysis and response frequency

Subsample 1 (n = 155)	M	DS	S	K	K-S	S-W
Item 1	2.60	1.36	.84	-.33	.32***	.84***
Item 2	3.60	1.52	-.08	-1.22	.19***	.91***
Item 3	2.67	1.43	.56	-.64	.21***	.89***
Item 4	5.01	1.37	-1.33	.65	.31***	.73***
Item 5	1.42	1.02	2.93	8.71	.45***	.48***
Item 6	1.94	1.22	1.23	.57	.29***	.76***
Item 7	5.30	1.21	-2.01	3.68	.37***	.63***
Item 8	2.18	1.29	1.03	.09	.28***	.81***
Item 9	4.99	1.46	-1.52	1.29	.29***	.72***
Item 10	1.46	.98	2.43	6.05	.45***	.54***
Item 11	1.44	1.03	2.66	6.77	.46***	.50***
Item 12	4.91	1.25	-1.28	.98	.27***	.79***
Item 13	1.88	1.38	1.55	1.28	.34***	.68***
Item 14	2.88	1.72	.56	-1.06	.24***	.86***
Item 15	1.27	.77	3.95	18.84	.47***	.41***
Item 16	1.78	1.13	1.84	3.34	.29***	.71***
Item 17	5.27	1.16	-1.91	3.36	.32***	.68***
Item 18	5.17	1.22	-1.71	2.40	.30***	.71***
Item 19	4.62	1.40	-.94	-.08	.25***	.84***
Item 20	1.74	1.07	1.65	2.38	.32***	.71***
Item 21	5.08	1.32	-1.46	1.32	.31***	.73***
Item 22	1.80	1.23	1.64	1.73	.32***	.69***
Subsample 2 (n = 154)	M	DS	S	K	K-S	S-W
Item 1	2.66	1.37	.89	-.09	.30***	.85***
Item 2	3.27	1.52	.22	-1.16	.22***	.90***
Item 3	2.80	1.45	.56	-.71	.24***	.89***
Item 4	5.01	1.34	-1.33	.86	.2***	.75***
Item 5	1.38	.90	2.79	7.59	.45***	.49***
Item 6	2.01	1.26	1.39	1.35	.26***	.77***
Item 7	5.27	1.22	-1.82	2.79	.37***	.65***
Item 8	2.37	1.52	1.08	.03	.30***	.80***
Item 9	4.74	1.50	-1.02	-.09	.25***	.80***
Item 10	1.48	1.06	2.82	8.21	.42***	.52***
Item 11	1.50	1.09	2.62	6.57	.42***	.52***
Item 12	4.89	1.36	-1.35	1.10	.27***	.78***
Item 13	2.02	1.45	1.42	.98	.30***	.73***
Item 14	2.71	1.73	.80	-.73	.28***	.82***
Item 15	1.73	1.32	1.92	2.71	.39***	.61***
Item 16	1.97	1.33	1.53	1.50	.28***	.73***
Item 17	5.17	1.25	-1.70	2.34	.31***	.70***
Item 18	5.23	1.15	-1.68	2.38	.33***	.70***
Item 19	4.83	1.26	-1.03	.26	.25***	.82***
Item 20	2.08	1.49	1.29	.49	.29***	.74***
Item 21	5.08	1.28	-1.40	1.17	.31***	.74***
Item 22	2.04	1.36	1.31	.80	.27***	.76***

Note. *** $p < .001$; S=Skewness; K=Kurtosis; K-S=Kolmogorov-Smirnov test of normality; S-W=Shapiro-Wilk test of normality.

questionnaire.

Parallel analysis determined four factors to be extracted (see **table 2** and **figure 1**). To determine the number of factors to extract, the scree plot and eigenvalues were also examined. The eigenvalue

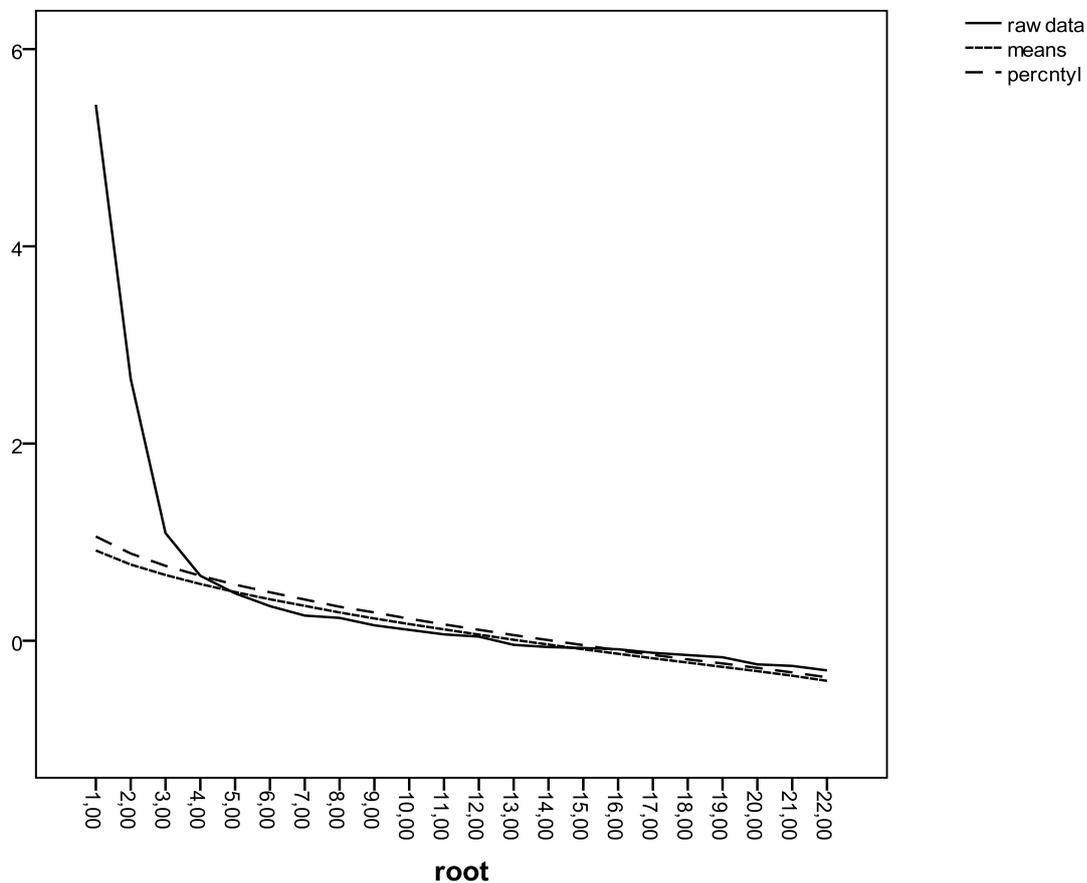
greater than one criterion suggested extracting four factors, accounting for 44.56% of the total variance. Inspection of the scree plot suggested a solution of up to four factors.

Both Bartlett's Test of Sphericity and Kaiser-Meyer-

Table 2. Raw Data Eigenvalues, Mean and Percentile Random Data Eigenvalues

Root	Raw Data	Means	Percentiles
1	5.435473	0.915367	1.057003
2	2.656241	0.772757	0.884656
3	1.091410	0.666764	0.759497
4	0.659231	0.575487	0.659151
5	0.480649	0.493936	0.568666
6	0.351038	0.420441	0.491680
7	0.255089	0.353716	0.418142
8	0.231617	0.286787	0.344696
9	0.156252	0.225883	0.286828
10	0.110279	0.168993	0.223303
11	0.064543	0.115553	0.165847
12	0.041714	0.062293	0.111253
13	-0.041609	0.010072	0.057229
14	-0.064211	-0.038901	0.006273
15	-0.073695	-0.086689	-0.044832
16	-0.086280	-0.132357	-0.096941
17	-0.122387	-0.178025	-0.143317
18	-0.145061	-0.221497	-0.188930
19	-0.167643	-0.265384	-0.230231
20	-0.239725	-0.308520	-0.275141
21	-0.255125	-0.354532	-0.321203
22	-0.300814	-0.406797	-0.370436

Figure 1. Raw Data Eigenvalues versus Mean and Percentile Random Data Eigenvalues



Olkin Measure of Sampling Adequacy results suggested that items were appropriate for proceeding with factor analysis. Specifically, Bartlett's Test of Sphericity (Chi-Square=1262.08; *df*=231) was significant (*p*<.001), indicating that the correlation matrix is factorable based on a suitable level of variables interrelations, and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .83, demonstrating a sufficient proportion of common variance (Gorsuch 1983).

Based on the examination of the pattern of loadings and accepting a minimum of three indicators for each factor, we retained four factors explaining 44.56% of the total variance. Based on the resultant pattern matrix, item 20 "I feel like I'm at the end of my rope" that loaded simultaneously on two factors, without a difference of at least .30 between loading on the primary factor and loading on other factors, was not retained (this item loaded: on F2 at .349, and on F3 at .450).

Factor 1, with an eigenvalue of 5.48 and responsible for 23.70% of the total variance for the questionnaire, included 8 items which loaded above .48. The items with the highest loading are items 18 "I feel exhilarated after working closely with my recipients" and 19 "I have accomplished many worthwhile things in this job".

Factor 2, with 5 items loading above .44, had an

eigenvalue of 3.13, and accounted for 12.47% of the total variance explained. The items with the highest loading are items 1 "I feel emotionally drained from my work" and 2 "I feel used up at the end of the workday".

Factor 3, with 4 items loadings above .49, had an eigenvalue of 1.61 and accounted for 5.28% of the total variance. The items 10 "I've become more callous toward people since I took this job" and 11 "I worry that this job is hardening me emotionally" have the highest loading on this factor.

Factor 4, with 4 items loading above .44, had an eigenvalue of 1.27, and accounted for 3.12% of the total variance. The items 16 "Working with people directly puts too much stress on me" and 22 "I feel recipients blame me for some of their problems" have the highest loadings on this factor.

Items and factor loadings are presented in **table 3**. **Table 4** presents the factor correlation matrix.

The first factor "Personal Accomplishment", consisting of eight variables, had a Cronbach's alpha of .82, which delineates satisfactory internal consistency of this subscale. The second factor "Strain", involving five items, had a Cronbach's alpha of .78, which can be considered to be good. The third factor "Depersonalization", consisting of four items, had a Cronbach's alpha of .74. The fourth factor "Frustration",

Table 3. Factor loadings of the MBI items (pattern matrix)

Item	F1	F2	F3	F4
18. I feel exhilarated after working closely with my recipients	.728	.047	.117	-.179
19. I have accomplished many worthwhile things in this job	.692	-.034	.091	.057
9. I feel I'm positively influencing other people's lives through my work	.654	.010	-.110	.331
17. I can easily create a relaxed atmosphere with my recipients	.643	.089	.042	-.091
12. I feel very energetic	.597	-.217	-.245	.124
7. I deal very effectively with the problems of my recipients	.572	.166	.050	-.102
21. In my work I deal with emotional problems very calmly	.483	-.093	.100	-.127
4. I can easily understand how my recipients feel about things	.479	.107	-.098	-.025
1. I feel emotionally drained from my work	.000	.865	-.051	-.126
2. I feel used up at the end of the workday	.054	.859	-.094	-.143
8. I feel burned out from my work	-.088	.693	.000	.129
14. I feel I'm working too hard on my job	.132	.489	.084	-.007
3. I feel fatigued when I get up in the morning and have to face another day on the job	.045	.439	-.005	.152
10. I've become more callous toward people since I took this job	.123	-.079	.804	-.120
11. I worry that this job is hardening me emotionally	-.023	-.031	.751	.122
5. I feel I treat some recipients as if they were impersonal objects	-.035	-.104	.608	.152
15. I don't really care what happens to some recipients	-.034	.124	.488	-.180
16. Working with people directly puts too much stress on me	.135	.104	.006	.671
22. I feel recipients blame me for some of their problems	-.078	-.197	-.151	.610
13. I feel frustrated by my job	-.075	.289	.103	.544
6. Working with people all day is really a strain for me	-.056	.152	.162	.436
% explained variance	23.70	12.47	5.28	3.12

Note. F1=Personal Accomplishment; F2=Strain; F3=Depersonalization; F4= Frustration.

Table 4. Factor correlation matrix

	F1	F2	F3	F4
F1	—			
F2	-.112	—		
F3	-.483	.365	—	
F4	-.452	.428	.638	—

Note. F1=Personal Accomplishment; F2=Strain; F3=Depersonalization; F4=Frustration.

comprising four items, had a Cronbach's alpha of .71. One item was removed from this factor scale due to corrected item-total correlation below .40 (item 22 "I feel recipients blame me for some of their problems"). Thus, alpha for the fourth factor, now consisting of three

the MBI subscales.

Confirmatory factor analysis

The confirmatory factor analysis performed on

Table 5. Corrected item-total correlations

Item	F1	F2	F3	F4
Item 4	.479			
Item 7	.505			
Item 9	.492			
Item 12	.584			
Item 17	.592			
Item 18	.649			
Item 19	.557			
Item 21	.449			
Item 1		.683		
Item 2		.661		
Item 3		.406		
Item 8		.611		
Item 14		.469		
Item 5			.570	
Item 10			.525	
Item 11			.684	
Item 15			.369	
Item 6				.541
Item 13				.616
Item 16				.529
Cronbach's alpha	.82	.78	.74	.75

Note. F1=Personal Accomplishment; F2=Strain; F3=Depersonalization; F4= Frustration.

variables, was .75. Corrected item-total correlations are presented in **table 5**.

The revealed dimensions correlated significantly with each other ($-.38 \leq r \leq .53$; $p < .01$, two-tailed tests), except for the non-significant correlation between factor 1 (*Personal Accomplishment*) and factor 2 (*Strain*) ($r = -.03$). In particular, factor 1 (*Personal Accomplishment*) and factor 3 (*Depersonalization*) are moderately but significantly and negatively associated ($r = -.38$; $p < .001$, 2-tailed test), and so is the case with factor 1 (*Personal Accomplishment*) and factor 4 (*Frustration*) ($r = -.35$; $p < .001$, two-tailed test), whereas negative moderate relationship was found between factor 2 (*Strain*) and factor 3 (*Depersonalization*) ($r = .22$; $p < .001$, 2-tailed test), and higher correlations were found between factor 2 (*Strain*) and factor 4 (*Frustration*) ($r = .48$; $p < .001$, two-tailed test) and between factor 3 (*Depersonalization*) and factor 4 (*Frustration*) ($r = .53$; $p < .001$, two-tailed test). **Table 6** shows the correlation coefficients of all

the second random subsample showed reasonable goodness-of-fit for the oblique 4-factorial model: $[\chi^2] (161, N=154) = 266.22$; $p = .000$; $\chi^2/df = 1.65$; NNFI = .94; CFI = .95; RMSEA = .06; 90% confidence interval = .051–.079 (see **table 7**). All manifest variables loaded significantly ($p < .05$) on their hypothesized latent factors. **Figure 2** presents the standardized parameter estimates.

Discussion

Much research has reported the psychometric properties of the MBI, with manifestly different factor analytic results since previous analyses have found between two- and five-factor solutions.

Our study was aimed at determining the most psychometrically sound representation of the structure of burnout as measured by the MBI among a sample of

Table 6. Subscales intercorrelations

	F1	F2	F3	F4
F1	–			
F2	-.030	–		
F3	-.384**	.220**	–	
F4	-.345**	.475**	.531**	–

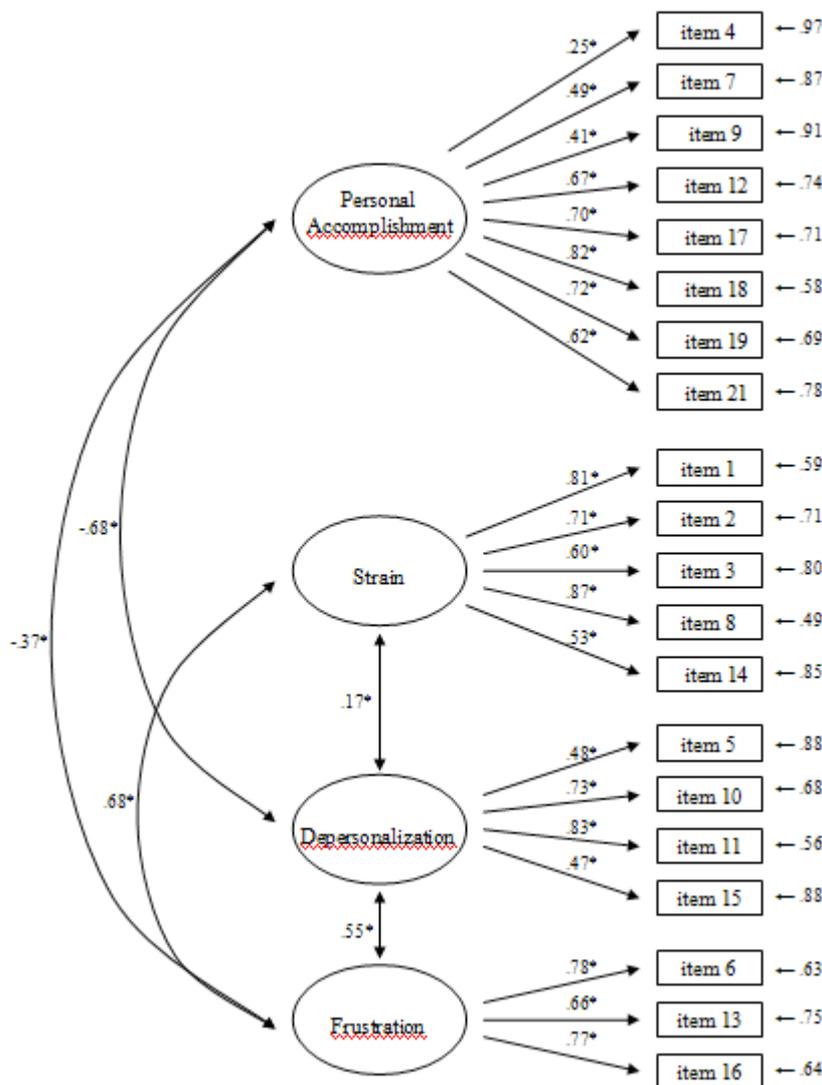
Note. ** $p < .01$; F1=Personal Accomplishment; F2=Strain; F3=Depersonalization; F4=Frustration.

Table 7. Fit indices for the 4-factorial model

χ^2	df	p	χ^2/df	NNFI	CFI	RMSEA	90% CI
266.22	161	.000	1.65	.94	.95	.06	.051–.079

Note. NNFI=Non-Normed Fit Index; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation.

Figure 2. Empirical model (standardized solution)



Note. * $p < .05$.

high school teachers.

Based on our findings, exploratory factor analysis highlighted a four-factor model: “Personal Accomplishment” (Items 18, 19, 9, 17, 12, 7, 21, and 4), “Strain” (Items 1, 2, 8, 14, and 3), “Depersonalization” (Items 10, 11, 5, and 15), and “Frustration” (Items 16, 13, and 6). This solution presents some differences compared to traditional structure: Emotional Exhaustion separated into two factors labeled “Strain”, which refers to feelings of being emotionally drained and burned out from work, and “Frustration”, which

refers to feeling of stress and frustration about working with people. Besides, item 20 “I feel like I’m at the end of my rope” loaded simultaneously on the second and third factor, and item 22 “I feel recipients blame me for some of their problems” presented a corrected item-total correlation below .40. Based on this empirical ground, we eliminated both items in the original MBI, resulting in a 20-item scale.

According to the performed confirmatory factor analysis, the four-factor structure model showed a good fit to the empirical data, as indicated by the fit indices.

Our outcomes seem in line with some previous research (Densten 2001, Firth et al. 1985). In particular, Firth et al. (1985) gathered very similar results, suggesting that feelings of being ‘emotionally drained’ were distinct from feelings of ‘frustration and discouragement about work’.

The four revealed dimensions showed internal consistencies comparable to those reported in the literature and subscales’ intercorrelations in the expected direction. Specifically, “Strain” and “Frustration” correlated positively and significantly with “Depersonalization”, which in turn showed a significant negative correlation with “Personal Accomplishment”. The correlation between “Frustration” and “Personal Accomplishment” was moderately negative, pointing to the discriminant validity of each factor (Kokkinos 2006), whereas the association of “Strain” and “Personal Accomplishment”, although negative, was not relevant. As expected, “Strain” and “Frustration” showed a positive and moderate significant correlation. Overall, the observed correlations between the reported dimensions provide evidence of the relative independence of the four emerged factors, indicating that the subscales measure several aspects of the investigated construct.

Although promising, our findings should be interpreted with some caution. First, our sampling methodology did not permit us to know how representative our sample was of the population. Second, the sample is quite weighted towards females (approximately 70%), and this uneven sampling did not permit to perform gender-separate exploratory factor analyses and multisample confirmatory factor analyses in order to verify structural invariance for gender. Third, a recruitment based on volunteers is critical as well, since volunteers may be strongly different from non-volunteers as regards burnout levels. A further limitation involves the fairly small sample size relative to the number of items being analyzed. Larger samples might provide increased confidence that results would be consistent across other comparable groups of participants (Boles et al. 2000). Lastly, the specific sample’s selection might have impacted the findings. Further construct validity research involving primary, low secondary and high secondary school teachers would be needed to (i) test the measurement invariance across each teaching panel, (ii) to compare the models reported in works where the MBI English language version has been used with our data, (iii) and to observe differences or similarities attributable to sociocultural and linguistic contexts (Aluja et al. 2005).

Outcomes from the current study need to be replicated and extended. A significant issue in the dimensional structure of MBI is its factorial stability over time. Indeed, invariance of factor solutions over time is necessary before differences in factor scores over occasions can be meaningfully evaluated. This may be particularly important for establishing the clinical utility and interpretability of the measure, given its usefulness for tracking changes over time or across treatment through repeated administrations in order to compare the effectiveness of different treatment methods in randomized trial of interventions (Linzer et al. 2015, Ripp et al. 2016, Triscari et al. 2015). That being said, further research on the longitudinal and cross-cultural stability of MBI factor solutions is still needed.

In conclusion, the importance of psychometrically sound instruments to measure burnout is evident not only for the purpose of empirical research but also for individual assessment in human services professions.

Epidemiological knowledge of burnout needs reliable and valid instruments in order to identify specific groups at risk and planning appropriate interventions and treatments. The advantage of using MBI is twofold: its specificity concerning both the construct indicators and the occupational group. The calibration of the scale in the specific national context with the specifically designated population is a prerequisite for employing the instrument for diagnostic evaluations. Future research with the MBI should extend our knowledge about the etiology and the persistence of burnout in the teaching professions. The results of the present study might provide a tool that can validly measure the prevalence of the syndrome among Italian high school teachers. Upcoming studies might also use our results as a basis for investigating a variety of correlates of the four revealed dimensions of the construct.

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