5th World Conference on Educational Sciences - WCES 2013

Maslach Burnout Inventory-Student Survey (MBI-SS): A Validity Study

Guler Yavuz [a] *, Nuri Dogan [b]

[a]Res. Ass. Guler Yavuz, Hacettepe Universitesi Egitim Bilimleri Bolumu, Ankara, 06532, Turkiye
[b] Assoc Prof. Dr. Nuri Dogan, Hacettepe Universitesi Egitim Bilimleri Bolumu, Ankara, 06532, Turkiye

Abstract

The researches show that burnout is related student achievement and Maslach Burnout Inventory-Student Survey (MBI-SS) is one of the most known measurement tool about burnout. For this reason there is need for validity studies of the MBI-SS for Turkish High school students. During the scale carrying out process, less-known but more effective validated procedures are used. The aim of this study is carrying out a construct validity study for a MBI-SS which assess the burnout related to student achievement. In this research, the scale is applied to 9th, 10th, 11th and 12th grade students, the data obtained from 1020 high school students and is analysed for the validity and reliability studies of the MBI-SS. Results show that the reliability of this scale is satisfying. With the results of confirmatory factor analysis it was found that MBI-SS, which was applied Turkish student, has got three dimension(exhaustion, cynicism and reduced efficacy). But, the findings of confirmatory factor analysis are not similar to the findings of less-known validated procedures determined below and explanatory factor analysis. Findings show that the less-known validated procedures and explanatory factor analysis can not give more stronger statistical results than confirmatory.
© 2013 The Authors. Published by Elsevier Ltd. Open access under CC BY-NC-ND license.
Selection and/or peer-review under responsibility of Academic World Education and Research Center.

Keywords: burnout, maslach burnout ınventory-student survey(MBI-SS), Velicer's map test, parallel analysis, factor analysis, confirmatory factor analysis

1. Introduction

1.1. Problem Statement

Burnout is a condition of emotional exhaustion (EE), depersonalization (DP), and a reduced sense of personal accomplishment (PA) that can occur among individuals who work with people in some capacity. The term ''burnout'' was first used to describe a syndrome of exhaustion observed among mental health professionals (Freudenberger, 1974). Burnout is a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do 'people-work' of some kind. A key aspect of the burnout syndrome is increased feelings of emotional exhaustion. Another aspect is the development of negative, cynical attitudes and feelings about one's clients. Such negative reactions to clients may be linked to the experience of emotional exhaustion, i.e. these two aspects of burnout appear to be somewhat related. The items for the Maslach Burnout Inventory (MBI) were designed to measure hypothesized aspects of the burnout syndrome. The interview and questionnaire data collected during our earlier, exploratory research were a valuable source of ideas about the attitudes and feelings that characterized a burned-out worker. In addition, numerous established scales were reviewed for useful content

Corresponding Author: Guler Yavuz, H Tel.: +90 312 2978550
  E-mail address: gyavuz@hacettepe.edu.tr

material, although no items were borrowed outright. Items were written in the form of statements about personal feelings or attitudes (Maslach & Jackson, 1981). The frequency scale is labeled at each point and ranges from I ('a few times a year or less') to 6 ('every day'). A value of zero is given if the respondent indicates (by checking a separate box) that he or she never experiences the feeling or attitude described. The intensity scale ranges from 1 ('very mild, barely noticeable') to 7 ('major, very-strong'). It is not completed (and thus given a zero value) if the respondent checks 'never' on the frequency scale. Many theories of burnout attempt to explain its development through an interplay of job-related (environmental) and personality factors (e.g., Golembiewski and Munzenrider, 1988; Leiter and Maslach, 1988; O'Brien and Page, 1994). The main objective of the current study is to investigate the modified MBI-GS that has been adapted for use among students, from now on called the MBI–Student Survey (MBI-SS). In previous adaptations of the original MBI, instructors was substituted for recipients (e.g., Balogun et al., 1996; Gold & Michael, 1985), which is problematic because it might change the meaning of the particular items involved. However, because the MBI-GS is a more generic instrument that measures burnout without referring to other people, such inherent problems of rewording are avoided. Burnout among students refers to feeling exhausted because of study demands, having a cynical and detached attitude toward one's study, and feeling incompetent as a student. It is expected that the three-factor structure will be replicated in the MBI-SS (Schaufel et al., 2002)

2. Purpose of Study

The main aim of this study is determination of psychometric properties of Maslach Burnout Inventory-Student Survey for Turkish high school students and the other aim of this study was to compare the four validation methods that are Velicer's MAP Test, Horn's Paralel Analysis, Confirmatory and Explanatory Factor Analysis. In this sense, determination of the reliability and validity of the related scale are done with Velicer's MAP Test, Horn's Paralel Analysis, Confirmatory and Explanatory Factor Analysis . For validity studies, four methods are used to determine the factors of the scale. For Velicer's MAP Test and Horn's Paralel Analysis, O'Connor's syntax program is used.

3. Method

In study, the validity and reliability of Maslach Burnout Inventory-Student Survey application (MBI-SS) of Turkish students was intended to work. For the adaptation process of related 15 items, MBI-SS was applied to 1020 high school students in different grades. For validity analysis Velicer's MAP Test (Minimum average partial methods), Paralel Analysis (with Glorfeld's extension) and Confirmatory and Explanatory factor Analysis were used. Then for reliability of MBI-SS, Cronbach's Alpha Coefficients were analysed for each dimension. Finally all results have been reported. And

3.1. Participants and Data Collection

1020 participants, who are students in 9th, 10th, 11th and 12th grades in high school, have participated in the study voluntarily. MBI-SS was administered to those groups. It was told that participation was voluntary, scores would be kept anonymous. For data collection MBI-SS was used. The 15 items which have the same sentence structure which have the same grammar form, are modified in that questionnaire. Students rated each statement on a seven point(never..all time) scale ranging from. For study, first half of the data (1020) was taken randomly and half of this data(509) was used with Velicer's MAP Test, Parallel analysis and Explanatory factor analysis. Then half of data was taken randomly again and half of this data (530) was used with Confirmatory factor analysis.

3.2. Data analysis

Velicer's MAP Test, Parallel analysis and Confirmatory and Explanatory factor analysis were used to determine the construct validity of scale. The MAP test and parallel analysis were implemented with the use of available syntax (O'Connor, 2000). For implementation of MAP test, O'Connor's program requires a correlation matrix or principal component analysis of the variables of interest. So first a correlation matrix was prepared and then the matrix was placed into the syntax and the program was executed. For parallel analysis the program do not need correlation matrix and the necessary definition in the program was for our variables (N=509 and k=15). Program was executed for the parallel analysis too. With using of O'Connor's syntax; MAP test and parallel analysis

provides number of dimension directly. The number of dimensions which offered on MAP test and parallel analysis; directly visible in the output. We performed a confirmatory factor analysis (CFA) for half of data (530) using LISREL 8.80 on the MBI-SS (Joreskog&Sörbon, 2002). The measured and structural model were evaluated with the following index χ^2, the goodness of Fit Index (GFI), the comparative fit index (CFI), the incremental fit index (IFI), normal fit index (NFI) and Parsimony Goodness of fit index (PGFI), and root mean square residuals (RMR), RMSEA, and χ^2/df criterion. Finally for all dimensions Cronbach Alpha coefficient calculated.

4. Findings

The psychometric properties of MBI-SS on Turkish student samples with; MAP test, Parallel analysis, confirmatory and explanatory factor analysis and Cronbach's Alpha application was given below.

4.1. The Findings of Velicer'MAP Test and Parallel Analysis for construct validity

According to O'Connor (2000), Velicer's (1976) MAP test involves a complete principal components analysis followed by examination of the series of the matrices of partial correlations. Specifically, on the first step, the first principal component is partialled out of the correlations between the variables of interest and the average squared coefficient in the off-diagonals of the resulting partial correlation matrix is computed. On the second step, the first two principal components are partialled out of the original correlation matrix and the average squared partial correlation is again computed. These computations are conducted for k (the number of variables) minus one step is then lined up, and the number of components is determined by the step number in the analyses that resulted in the lowest average squared partial correlation. The average squared coefficient in the original correlation matrix is also computed, and if this coefficient happens to be lower than the lowest average squared partial correlation, then no components should be extracted from the correlation matrix. Statistically, components are retained as long as the variance in the correlation matrix represent systematic variance. Components are no longer retained when there is proportionally more unsystematic variance than systematic variance. Parallel analysis involves extracting eigenvalues from random data sets that parallel the actual data set with regard to the number of cases and variables. For our example, the original data set consist of 509 observations for each of 15 variables, then a series of random data matrices of this size (509 by 15) would be generated, and eigenvalues would be computed for the correlation matrices for the original data and for each of random data sets. The eigenvalues derived from the actual data are then compared to the eigenvalues would be computed for the correlation matrices for the original data and for each of the random data sets. The eigenvalues derived from the actual data are then compared to the eigenvalues derived from the random data. In Horn's (1965) original description of this procedure, the mean eigenvalues from the random data served as the comparison baseline, on the other hand the recommended practice is to use the eigenvalues that correspond to the desired percentile (typically the 95th) of the distribution of random eigenvalues (Glorfeld, 1995; O'Connor, 2000). Factors or components are retained as long as the ith eigenvalue from the actual data is greater than the ith eigenvalue from the random data.

Table 1. MAP Test and Parallel Analysis Results for the Number of Components

No	Actual Eigenvalues	Average Correlation		Random Data Eigen Values		No	Actual Eigenvalues	Average Correlation		Random data Eigen Values	
		Squared	*Power 4*	*Means*	*%95 Prcntyle*			*Squared*	*Power 4*	*Means*	*%95 Prcntyle*
0	6,7659	0,1829	0,0460	1,3016	1,3541	**8**	,4357	0,0937	0,0310	0,9575	0,9845
1	2,0822	0,0482	0,0041	1,2382	1,2750	**9**	,3888	0,1284	0,0533	0,9222	0,9508
2	,8224	**0,0183***	**0,0009****	**1,1831**	**1,2195**	**10**	,3638	0,1595	0,0681	0,8893	0,9156
3	,7138	0,0241	0,0017	1,1395	1,1705	**11**	,3032	0,2250	0,1115	0,8562	0,8844
4	,6217	0,0351	0,0056	1,0986	1,1298	**12**	,2994	0,3185	0,1823	0,8213	0,8503
5	,6155	0,0448	0,0078	1,0613	1,0974	**13**	,2869	0,4684	0,3336	0,7807	0,8131
6	,5643	0,0619	0,0128	1,0258	1,0578	**14**	,2581	1,000	1,0000	0,7363	0,7724

| 7 | ,4784 | 0,0759 | 0,0230 | 0,9883 | 1,0169 |

**The smallest average squared partial correlation*
** The smallest 4 [th] power partial correlation

To further identify the dimensions of the construct measured by the MBI-SS, exploratory analysis on the first sample were conducted using the results from both Horn's parallel analysis (HPA) and Minimum Average Partial (MAP), the procedures which were broadly validated recommended by statisticians (O'Connor, 2000). Both MAP and HPA and explanatory(KMO=0,926, Bartlett Test: sig=0,000) procedures identified two factors. Table 1 indicates that both the original MAP and the revised MAP suggested the retention two factors. Because the smallest eigenvalue is 0,0183 (squared) and 0,0009 (power 4). Also shows the comparisons of the result of the HPA test with the actual eigenvalues. From table it can be seen that initial three eigenvalues are greater than those generated by HPA (for the both average and the 95 th percentile criteria); as such HPA also discovered two factors. But the original MBI-SS has three factor, and it was examined by confirmatory factor analysis and also the results of MAP, HPA and explanatory factor analysis are not confirmed the results which was expected.

Table 2. Explanatory Factor Analysis Results (Total Variance Explained)

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings			
	Total	% of Variance	Cumulative %	Cumulative %	Total	% of Variance	Cumulative %
1	6,766	45,106	45,106	45,106	5,030	33,534	33,534
2	2,082	13,881	58,987	58,987	3,818	25,453	58,987
3	,822	5,482	64,470				
4	,714	4,759	69,228				
5	...	....	....				
15	,258	1,721	100,000				

Extraction Method: Principal Component Analysis.
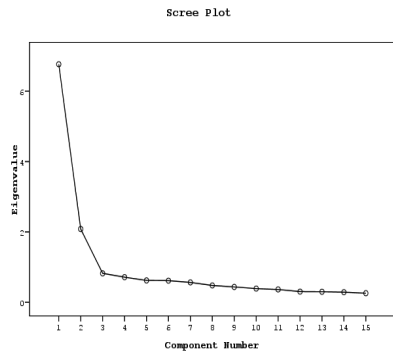
4.2. The findings of Confirmatory Factor Analysis

The confirmatory factor analysis (CFA) on half of samples(530) systematically discovered that the hypothesized measurement model of the three dimension construct provided significantly better model fit.

Table 3. Confirmatory Factor Analysis, FIT Indices Results

MBI-SS	n	Chi-square (df)	CFI	NFI	IFI	GFI	PGFI	RMSEA	SRMR
Our study (For three factor)	530	259,70 (87)	0,98	0,97	0,98	0,94	0,68	0,063	0,034

For MBI-SS in Schaufeli and his friends (2002); there were three sub- dimension in original scale Exhaustion, Cynicism and reduced Efficacy. And in our study the dimensions which was adapted same the original scale. Some different researchers had made some modification on the items of the scale in different years. But all validity studies done in other related researches, the MBI-SS factor have three sub-dimensions. So the confirmatory factor analysis was made for original and modifying scale.

Table 3 list of the model fit of three factor model and comparisons of the statistics done. The three factor model produced chi-square statistics with p<0.05. RMSEA equals to 0,063. SRMR is equal 0,034. The other fit indices including CFI is 0,98; NFI is 0,97; IFI is 0,98 and GFI is 0,94; PGFI is 0,68. Based on those results the model fit index show a good model fit. Alaso these results confirmed three factor structures.

4.3. Findings about reliability of the MOS

The Cronbach Alpha coefficient was accounted for sub dimension of motivation factor. The values have given at below tables.

Table 4. The Cronbach Alpha Coefficient of Scale

	Exhaustion	Cynicism	reduced Efficacy
MBI-SS	0,838	0,844	0,875

Our adaptation scale has higher reliability values than the original scale as seen in Table 3.

5. Conclusion and Recommendations

For this study, the items of MBI-SS developed Schaufeli and his friends (2002), analyzed and the items related to the three basic factors named exhaustion, cynicism and reduced efficacy are studied. The researches related to the MBI-SS are observed and it is seen that, sometimes the items expressed different styles or modified. But the all studies say that those items are loaded in three dimensions. Also in our study with confirmatory factor analysis, the items are loaded in three dimensions. According to the dimensions expressed with our study, the results of MAP test, Parallel analysis, explanatory factor analysis index does not support the three dimensional structure suggestion of the scale. But these results are not expected for MBI-SS. An the reliability of dimension of exhaustion, cynicism and reduced efficacy 0.838, 0.844, 0.875 so these values are quite reliable.To sum up for this study, a reliability and validity study is done with different method for an important scale related to the bornout.

References

Balogun, J. A., Helgemoe, S., Pellegrini, E., & Hoeberlein, T. (1996). Academic performance is not a viable determinant of physical therapy students'b urnout. Perceptual and Motor Skills, 83, 21-22

Freudenberger, N. J. (1974). Staff burnout. Journal of Social Issues, 30, 159-165.

Glorfeld, L. W. (1995). An improvement on Horn's parallel analysis methodology for selecting the correct number of factors to retain. Educational and Psychological Measurement, 55, 377-393.

Golembiewski, R.T., Munzenrider, R.F., 1988. Phases of Burnout: Developments in Concepts and Applications. Prager, New York.

Gold,Y.,&Michael,W. B. (1985). Academic self-concept correlates of potential burnout in a sample of first-semester elementary school practice teachers:Aconcurrent validity study. Educational and Psychological Measurement, 45, 909-914.

Jöreskog, K.G. & Sörbom, D. (2002) LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language Fifth Printing. Lincolnwood, IL: Scientific Software International.

Leiter, M.P., Maslach, C., 1988. The impact of interpersonal environment on burnout and organizational commitment. Journal of Organizational Behavior 9, 297–308.

Maslach, C. & Jackson, S. E. (1981). The measurement of experienced burnout. Journal of Occupational Behaviour, 2 (2), 99-113.

O'Brien, S., Page, S., 1994. Self efficacy, perfectionism, and stress in Canadian nurses. Canadian Journal of Nursing Research 26 (3), 49–61.7

O'Connor, B.P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. Behavior Research Methods, Instruments, &Computers, 32, 396-402.

Schaufeli, W. B., Martinez, M. I., Pinto, A. M., Salanova, M., & Bakker, A.B. (2002). Burnout and engagement in university students - a cross national study, MBI-SS. Journal Of Cross-Cultural Psychology. 33 (5), 464-481.