



# The burnout syndrome among medical students at one University in Serbia: Validity and reliability of the Maslach Burnout Inventory – Student Survey

Milena Ilic, Zeljko Todorovic, Milena Jovanovic & Irena Ilic

To cite this article: Milena Ilic, Zeljko Todorovic, Milena Jovanovic & Irena Ilic (2016): The burnout syndrome among medical students at one University in Serbia: Validity and reliability of the Maslach Burnout Inventory – Student Survey, Behavioral Medicine, DOI: [10.1080/08964289.2016.1170662](https://doi.org/10.1080/08964289.2016.1170662)

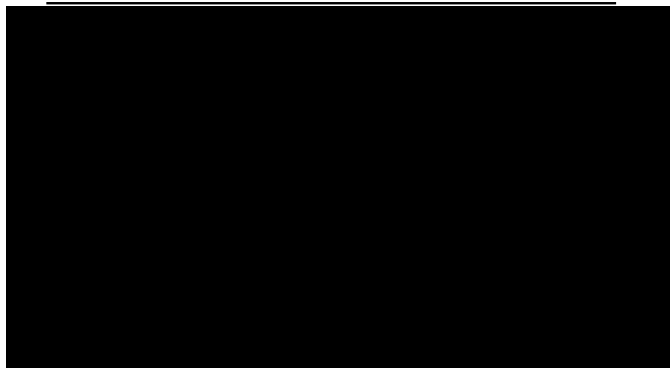
To link to this article: <http://dx.doi.org/10.1080/08964289.2016.1170662>



Accepted author version posted online: 29 Apr 2016.



Submit your article to this journal [↗](#)



Validation of MBI-SS among medical students

**The burnout syndrome among medical students at one University in Serbia: Validity and reliability of the Maslach Burnout Inventory – Student Survey**

Professor Milena Ilic<sup>1</sup>, Zeljko Todorovic<sup>2</sup>, Milena Jovanovic<sup>2</sup> and Irena Ilic<sup>2</sup>

<sup>1</sup>Full Professor of Epidemiology, Department of Epidemiology, Faculty of Medical Sciences, University of Kragujevac, Serbia;

<sup>2</sup>MD, PhD student, Faculty of Medical Sciences, University of Kragujevac, Serbia.

Corresponding Author Milena Ilic, MD, PhD, Faculty of Medical Sciences, University of Kragujevac, Department of Epidemiology, S. Markovica 69, Kragujevac 34000, Serbia

Tel./Fax. +381 34 306800, E-mail: drmilenailic@yahoo.com

**Abstract**

The Maslach Burnout Inventory – Student Survey (MBI-SS) contains 15 items that evaluate the following burnout dimensions: Emotional Exhaustion, Cynicism, and Academic Efficacy. The purpose of this study was to evaluate the dimensionality of the MBI-SS on a sample of Serbian medical students (n=760). The overall Cronbach's  $\alpha$  coefficient of the MBI-SS questionnaire was 0.757, while the Cronbach's  $\alpha$  coefficients for Emotional Exhaustion, Cynicism, and Academic Efficacy were 0.869, 0.856 and 0.852, respectively. Principal Component Analysis with Oblimin rotation indicated 3 main components that explained 64.9% variance. The confirmatory factor analysis revealed good fit indices ( $\chi^2/df = 575.74/87$ , RMSEA = 0.086 (90 Percent Confidence Interval for RMSEA = 0.079 to 0.092), CFI = 0.949, NNFI = 0.939, IFI = 0.949, GFI = 0.904) of the MBI-SS scale. The Serbian version of MBI-SS represents a valid and reliable instrument in the Serbian sample of medical students.

Keywords

burnout syndrome, medical students, MBI-SS, validity, reliability.

## INTRODUCTION

Burnout has been defined as a syndrome of emotional exhaustion, depersonalization, and reduced sense of personal accomplishment, which can occur among individuals who work with people.<sup>1</sup> Initially, this syndrome was described in “helping” professionals,<sup>2,3</sup> however, more recently the burnout has been extended to all occupational groups, including students.<sup>4</sup>

According to the literature, the Maslach Burnout Inventory (MBI) has been the most widely used questionnaire in the evaluation of burnout.<sup>3</sup> The student version of this instrument, the Maslach Burnout Inventory - Student Survey (MBI-SS), a scale designed to measure the burnout level of students, was constructed by Schaufeli and coauthors.<sup>4,5</sup> MBI-SS contains 15 items which evaluate the three dimensions of burnout: Emotional Exhaustion (EX), Cynicism (CY), and Academic Efficacy (AE). MBI-SS has been translated into several languages and several validation studies were conducted in different countries over the past few years.<sup>5-7</sup> Validity and reliability of the three-factor structure of the original MBI-SS scale have been confirmed in the majority of studies.

Nevertheless, the internal consistencies of a Chinese MBI-SS scale version were somewhat low in one study,<sup>8</sup> although the study by Zhang and coauthors<sup>9</sup> showed that the MBI-SS reliability and structure validity were consistent with the results in samples of Western students. In one validation study in Turkey,<sup>10</sup> both the structure and convergent validity were deemed adequate. But, in a recent validation study,<sup>11</sup> the construct validity tests (conducted by the Velicer’s MAP Test, Parallel Analysis and Explanatory Factor Analysis) in one half of the samples suggested the retention of two factors. Although the three-factor structure of the MBI-



weeks (retest), at the 4<sup>th</sup> week of class, during the lecture in the same subject (freshmen only) the initial test took place.

### **Ethical Considerations**

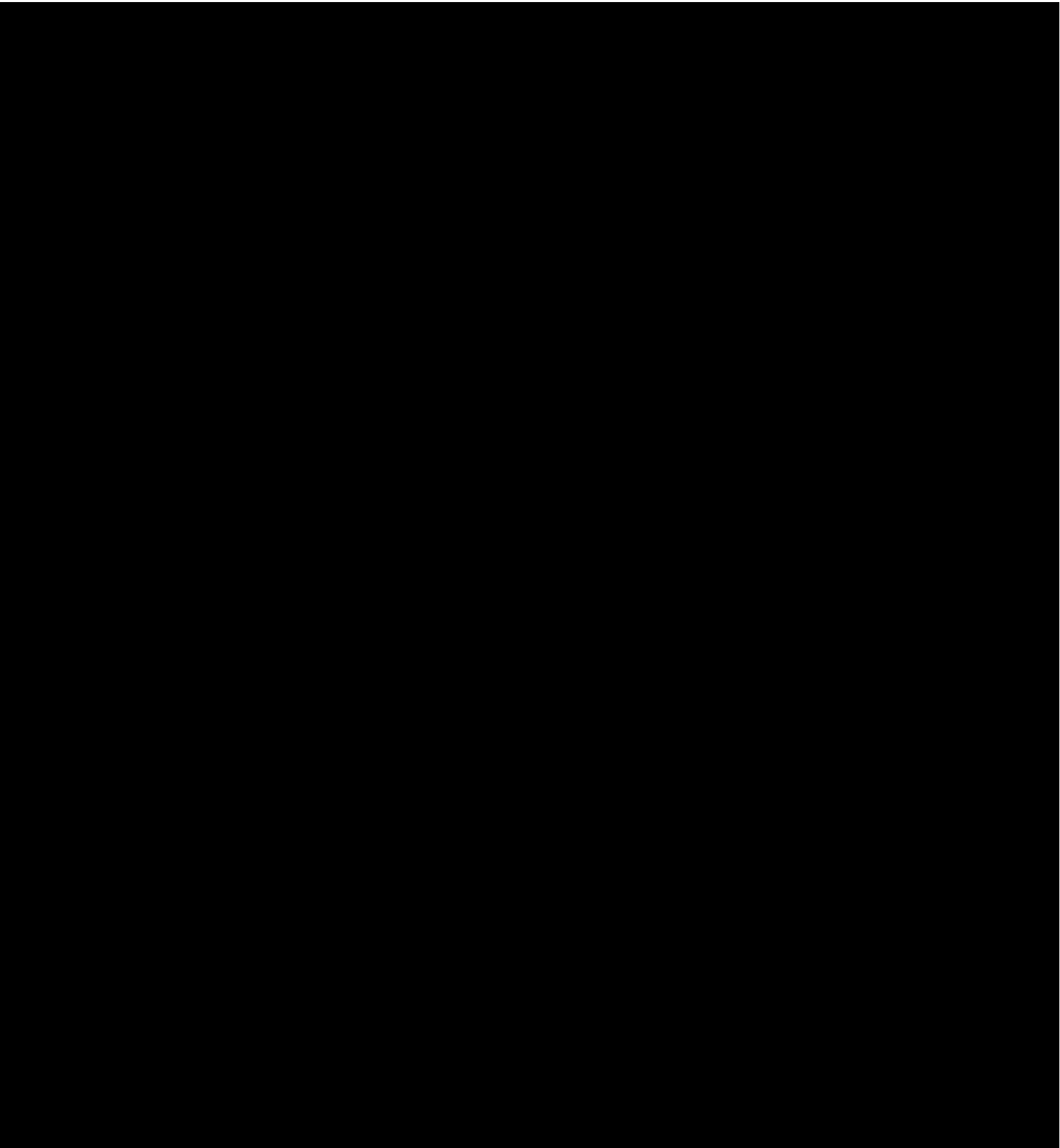
This study is a part of a research approved by the Ethics Committee of the Faculty of Medical Sciences, University of Kragujevac (Ref. No.: 01-1176). All participants provided informed written voluntary consent prior to taking part.

### **Instruments**

The questionnaires included:

1. Basic demographic characteristics (age, sex, place of residence, housing, study financing, etc), and
2. Maslach Burnout Inventory – Student Survey (MBI-SS). The MBI-SS consists of 15 items that represent three scales: EX (5 items), CY (4 items), and AE (6 items). Students were asked to indicate the level of agreement with each item, which were scored on a 7-point Likert-type scale ranging from 0 to 6, in order to best describe how frequently they felt in a particular way.

The authors obtained license from Mind Garden, Inc., to use the Maslach Burnout Inventory-Student Survey<sup>1</sup> for the period of one year. Translation and cultural adaptation were performed based on internationally accepted methodology.<sup>12</sup> First, the "forward" translation of the MBI-SS from English to Serbian was done by two independent bilingual translators whose mother tongue is Serbian. Next, there was a meeting of these translators where they compared their translations and resolved semantic differences by discussion and reaching consensus which resulted in synthesis of a common translation. The Serbian translation was reviewed by a panel



All statistical analyses were conducted using the Statistical Package for Social Sciences Software (SPSS Inc, version 19, Chicago, IL), and LISREL Software.<sup>14</sup>

## RESULTS

The analysis was divided into three parts, with the following tasks: (1) to describe socio-demographic traits of participants, (2) to determine reliability by calculating Cronbach's alpha coefficient of the internal consistency, and test-retest reliability, and (3) to determine validity using exploratory and confirmatory factor analyses.

The analysis included a total of 760 medical students (760 participants; participation rate: 90.9%). The test-retest analysis included a total of 93 medical students (93 participants; participation rate: 96.9%). Table 1 presents baseline socio-demographic data of participants (sex distribution, distribution across completed secondary school, marital status, housing and study financing).

The overall Cronbach's  $\alpha$  coefficient of the MBI-SS questionnaire was 0.757, while the Cronbach's  $\alpha$  coefficients for EX, CY, and AE were 0.869, 0.856 and 0.852, respectively (Table 2). Table 3 shows results of the test-retest reliability: the correlation coefficients were at the 0.01



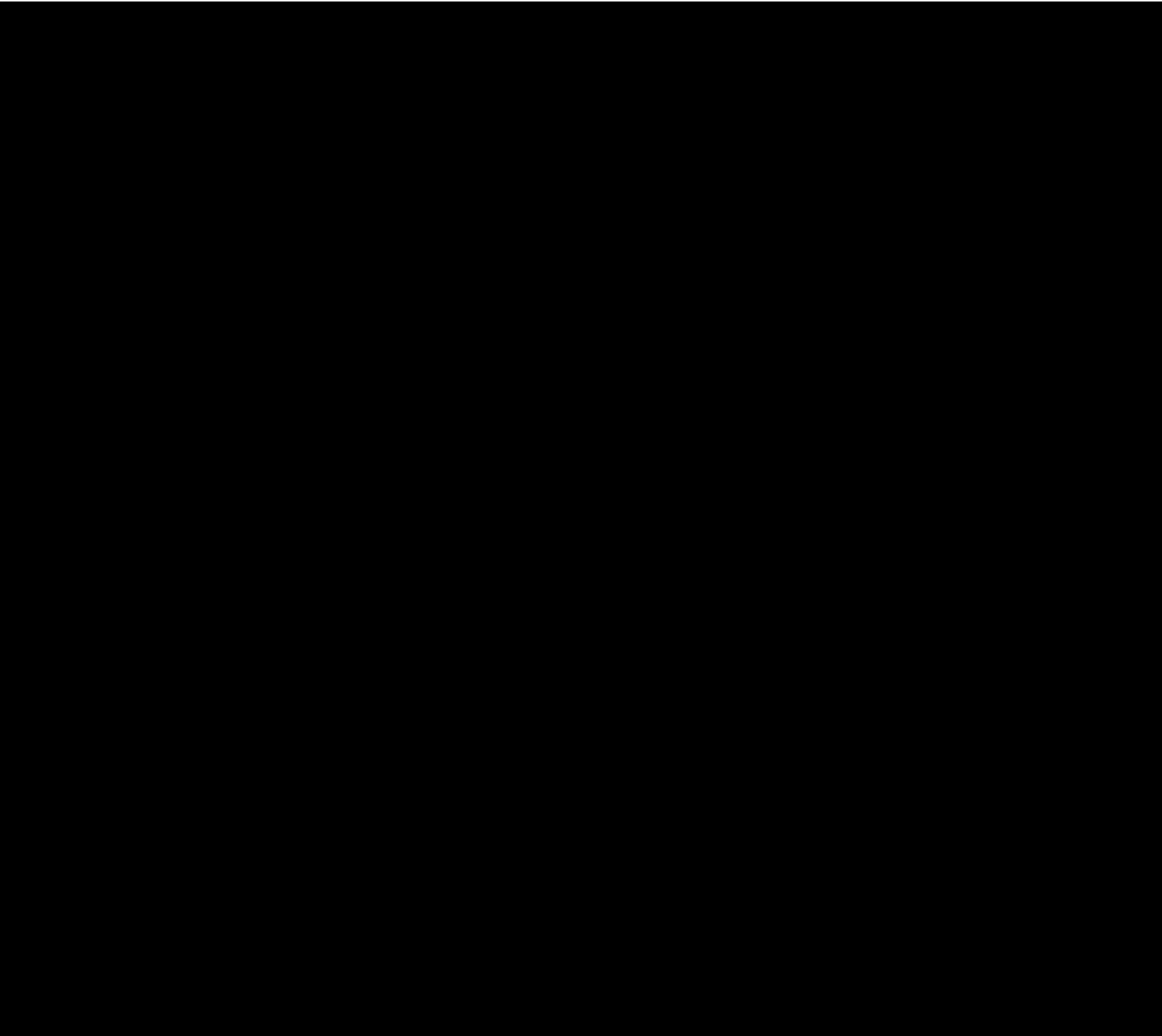
Besides our study, only two studies have examined consistency by the test-retest reliability: in a Turkish study,<sup>10</sup> the students took the MBI-SS twice in three weeks whereby the reliability coefficients were close to +1.0, while in Iran<sup>7</sup> repeating the test about 4 weeks later gave a reliability coefficient of 0.89, 0.84 and 0.67 respectively for EX, CY and AE.

Further, factor analyses in a sample of Serbian students and in a sample of female students at an Iranian university<sup>7</sup> confirmed that the MBI-SS inventory consisted of three factors, which explained 64.9% and 67.27% of variance, respectively. However, the findings of the explanatory factor analysis and the results from both parallel analysis and Minimum Average Partial test in the study at a university in Turkey<sup>11</sup> did not confirm the three-factor structure of the MBI-SS scale.

Similar to our results, numerous studies have consistently been revealing that the three-dimensional MBI-SS model provides significantly good model fit.<sup>8,10,11</sup> Confirmatory factor analysis of the Portuguese MBI-SS version in Brazilian and Portuguese samples showed fewer disagreements in the assessment of the three-dimension construct.<sup>6</sup>

### **Strengths and Limitations of the Study**

A strength of this validation study was that there were assessments both of reliability (in 2 forms: test-retest reliability and internal consistency reliability) and validity (both construct and structure validity, with exploratory and confirmatory factor analyses). Further, the student participation rate in our study was satisfactory - 90.9%. Consequently, study design, participation rate and complete statistical analysis in our study are able to provide complete comparability with validation studies that have used the MBI-SS instrument. In addition to known drawbacks of cross-sectional studies, a limitation of this study is its sample size. Further, the study was



## REFERENCES

- [1] Maslach C & Jackson SE. The measurement of experienced burnout. *J Organ Behav.* 1981;2:99–113.
- [2] Freudenberger HJ. The staff burn-out syndrome in alternative institutions. *Psychotherapy: Theory, Research and Practice.* 1975;12:73-82.
- [3] Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med.* 2012;172:1377-1385.
- [4] Schaufeli WB, Martinez IM, Marqués-Pinto A, Salanova M & Bakker AB. Burnout and engagement in university students: A cross-national study. *J Cross Cult Psychol.* 2002;33:464-481.
- [5] Schaufeli WB, Salanova M, González-Romà V & Bakker AB. The measurement of burnout and engagement: A confirmative analytic approach. *J Happiness Stud.* 2002;3:71-92.
- [6] Campos JA & Maroco J. [Maslach Burnout Inventory - Student Survey: Portugal-Brazil cross-cultural adaptation]. *Rev Saude Publica.* 2012;46:816-824.
- [7] Rostami Z, Abedi MR, Schaufeli WB, Ahmadi SA, Sadeghi AH. The Psychometric Characteristics of Maslach Burnout Inventory Student Survey: Among Students of Isfahan University. *Zahedan Journal of Research in Medical Sciences* 2014;16:55-58.
- [8] Hu Q and Schaufeli WB. The factorial validity of the Maslach Burnout Inventory - student survey in China. *Psychological Reports.* 2009;105:394-408.

- [9] Zhang Y, Gan Y. and Cham H. Perfectionism, academic burnout and engagement among Chinese college students: A structural equation modeling analysis. *Personality and Individual Differences*. 2007; 43:1529-1540.
- [10] Kutsal D, and Bilge F. Adaptation of Maslach Burnout Inventory - student Survey: Validity and Reliability Study. *World Applied Sciences Journal*. 2012;19:1360-1366.
- [11] Yavuz G and Dogan N. Maslach Burnout Inventory-Student Survey (MBI-SS): A Validity Study. *Procedia – Social and Behavioral Sciences*. 2014;116:2453-2457.
- [12] Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*. 2000;25:3186-3191.
- [13] Marôco J. Análise de Equações Estruturais, Fundamentos Teóricos, Software & Aplicações. Report Number, Lisboa, 2010.
- [14] Jöreskog KG & Sörbom D. LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language. Lawrence Erlbaum Associates, Hillsdale, 1993.
- [15] Maroco J, Tecdceiro M, Martins P, Meireles A. Estrutura fatorial de segunda ordem da Escala de Burnout de Maslach para estudantes numa amostra portuguesa. *Análise Psicológica*. 2008;4:639-649.

TABLE 1 Socio-demographic Characteristics of Study Participants

