

Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 159 (2014) 561 – 564

Procedia
Social and Behavioral Sciences

WCPCG 2014

Romanian Version of the Perceived Stress Scale: An Investigation of its Psychometric Properties

Alexandrina L. Dumitrescu^{a*}, Daniela Badiță^b, Carmen Beatrice Dogaru^b, Carmen Toma^b, Gheorghe Perțea^c, Carmen Duță^b

^a Private practice, Bucharest, R.O.U. 061572, Romania

^b University of Medicine and Pharmacy "Carol Davila", R.O.U. 050474, Bucharest, Romania

^c Ecological University, Bucharest, R.O.U. 061341, Romania

Abstract

The Perceived Stress Scale (PSS) is a widely used stress instrument that measures the degree to which life events are perceived as stressful. The goal of this study was to examine the psychometric properties of the Romanian version of the PSS-10 with a non-clinical sample. The subjects of the study were 528 undergraduate students at the University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania. All of the diagnostic tests indicated the adequacy of proceeding with factor analysis. Specifically, Bartlett's test of sphericity was statistically significant ($P < 0.0001$), and the Kaiser-Meyer-Olkin (KMO) value was 0.89. The overall Cronbach's alpha was 0.855, and the test-retest reliability coefficient was 0.72. The Exploratory Factor Analysis (EFA) showed that the rotated factor solution for the PSS-10 contained two factors with eigenvalues greater than 1, which accounted for 56.798% of the variance. Factor 1 consisted of 6 items representing "negative feelings" (Items 1, 2, 3, 6, 9, and 10) and accounting for 44.04% of the variance; whereas Factor 2 consisted of 4 items representing "positive feelings" (Items 4, 5, 7, and 8) and accounting for 12.76% of the variance. The item loadings ranged from 0.629 to 0.797. The Confirmatory factor analysis (CFA) indicated a very good fit of this two-factor model to this sample. The Romanian version of the PSS-10 demonstrated adequate psychometric properties for evaluating stress levels

© 2014 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Peer-review under responsibility of the Academic World Education and Research Center.

Keywords: stress, gender, psychometry, PSS-10;

1. Introduction

The Perceived Stress Scale (PSS) is a widely used stress instrument that measures the degree to which life events are perceived as stressful. The scale asks individuals to assess aspects of their life as unpredictable, uncontrollable, and overloading, being sensitive to chronic stress originating from life circumstances (Cohen et al. 1983). The PSS

* Alexandrina L. Dumitrescu. Tel.: +40-722-352-504

E-mail address: draldumitrescu@yahoo.com

has been used in various clinical circumstances, settings and cultures, and has been translated into more than 20 languages.

The original PSS scale had 14-items, but later it was revised to 10-items and 4-items respectively. Good psychometric properties were found with regard to validity and reliability for all versions of the PSS scales, except for the latest version, or the PSS-4 (Cohen, & Janicki-Deverts, 2012; Cohen, & Williamson, 1988).

The goal of this study was to examine the psychometric properties of the Romanian version of the PSS-10 with a non-clinical sample.

2. Material and methods

2.1. Sample

The subjects of the study were 528 undergraduate students at the University of Medicine and Pharmacy “Carol Davila”, Bucharest, Romania. All students selected for the survey answered the questionnaire. The mean age (S.D.) of dental students was 21.49 (3.36) years old. The percentage of female students was high in the sample (73.7%).

2.2. Instruments and measures

Perceived stress was measured using the Perceived Stress Scale (PSS-10) (Cohen, Kamarck, & Mermelstein, 1983). The whole translation process consisted of translation, back-translation and committee review. The internal consistency was verified by means of the Cronbach's alpha coefficient and the construct validity was analyzed by means of factorial exploratory analysis with varimax rotation.

2.3. Statistical analysis

Descriptive statistics and statistical analyses were performed with SPSS, Inc., Chicago, USA software. Descriptive statistics (e.g. means, standard deviations, range, skewness and kurtosis) and inferential statistics were used to analyze the data. Cronbach alpha coefficients were used to determine the internal consistency, homogeneity and unidimensionality of the measuring instrument. Principal factor extraction with oblique rotation was performed on the measuring instrument to determine the factor structure. Principal component extraction was used prior to principal factor extraction to estimate the number of factors, presence of outliers and factorability of the correlation matrices. The eigen values and scree plot were studied to determine the number of factors underlying the specific measuring instrument.

3. Results

All of the diagnostic tests indicated the adequacy of proceeding with factor analysis. Specifically, Bartlett's test of sphericity was statistically significant ($P < 0.0001$), and the Kaiser-Meyer-Olkin (KMO) value was 0.89. The overall Cronbach's alpha was 0.855, and the test-retest reliability coefficient was 0.72.

For data about the scale analysis of the PSS-10 see Table 1.

The Exploratory Factor Analysis (EFA) showed that the rotated factor solution for the PSS-10 contained two factors with eigenvalues greater than 1, which accounted for 56.79% of the variance. Factor 1 consisted of 6 items representing “negative feelings” (Items 1, 2, 3, 6, 9, and 10) and accounting for 44.04% of the variance; whereas Factor 2 consisted of 4 items representing “positive feelings” (Items 4, 5, 7, and 8) and accounting for 12.76% of the variance. The item loadings ranged from 0.629 to 0.797. The Confirmatory factor analysis (CFA) indicated a very good fit of this two-factor model to this sample. For factor loadings, see Table 2.

Table 1. Scale analysis

	Mean	SD	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PSS-1	2.04	0.95	0.59	0.84
PSS-2	1.81	1.06	0.70	0.83
PSS-3	2.54	0.92	0.57	0.84
PSS-4	1.40	0.84	0.54	0.84
PSS-5	1.61	0.90	0.474	0.85
PSS-6	1.92	1.00	0.62	0.83
PSS-7	1.52	0.89	0.42	0.85
PSS-8	2.07	0.93	0.35	0.86
PSS-9	2.11	0.98	0.64	0.83
PSS-10	1.64	1.11	0.65	0.83

Table 2. Factor Analytic Findings of the Romanian version of PSS-10

	Factor I	Factor II	Communality
PSS-1	0.68		0.51
PSS-2	0.75		0.66
PSS-3	0.71		0.52
PSS-4	0.31	0.68	0.56
PSS-5		0.63	0.47
PSS-6	0.77		0.61
PSS-7		0.68	0.49
PSS-8		0.76	0.58
PSS-9	0.79		0.65
PSS-10	0.74		0.61

4. Discussion

The Romanian version of the PSS-10 (Cohen, Kamarck, & Mermelstein, 1983) demonstrated adequate psychometric properties for evaluating stress levels.

With regard to the PSS-10 structure, we found similar results with previous reports of two related latent factors (Cohen, & Williamson, 1988). Cohen & Williamson (1988) reported two factors yielded the eigenvalues of 3.4 and 1.4, which accounted for 48.9% and 14.5% of the variance respectively. Roberti et al. (2006) yielded the eigenvalues of 5.07 and 1.12, accounting for 50.66% and 11.23% of the variance respectively. According to Roberti et al. (2006), Factor 1 represents "Stress" or "Perceived Helplessness", whereas Factor 2 represents "Control" or "Perceived Self- Efficacy. Similar results were reported by Wongpakaran & Wongpakaran (2010) who yielded 2 factors with eigenvalues of 5.05 and 1.60, accounting for 66 percent of variance. Factor 1 consisted of 6 items representing "stress"; whereas Factor 2 consisted of 4 items representing "control". The item loadings ranged from 0.547 to 0.881.

References

- Cohen, S., & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in the United States in probability samples from 1983, 2006, and 2009. *Journal of Applied Social Psychology, 42*, 1320-1334.
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Leung, D.Y., Lam, T.H., & Chan, S.S. (2010). Three versions of Perceived Stress Scale: validation in a sample of Chinese cardiac patients who smoke. *BMC Public Health, 10*, 513.
- PSS Frequently Asked Questions. Retrieved on 12 April 2014, from Carnegie Mellon University, Laboratory for the Study of Stress, Immunity and Disease [<http://www.psy.cmu.edu/~scohen/>]
- Roberti, J.W., Harrington, L.N., & Storch, E.A. (2006). Further Psychometric Support for the 10-Item Version of the Perceived Stress Scale. *Journal of College Counseling, 9*, 135-147.
- Wongpakaran, N., & Wongpakaran, T. (2010). The Thai version of the PSS-10: An Investigation of its psychometric properties. *BioPsychoSocial medicine, 4*, 6.