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

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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 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.

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

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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 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.
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


