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The greek translation of the symptoms rating scale for depression and anxiety: preliminary results of the validation study

Konstantinos N Fountoulakis*[1], Apostolos Iacovides[1], Soula Kleanthous[1], Stavros Samolis[1], Kyriakos Gougoulias[1], George St Kaprinis[1] and Per Bech[2]

Address: [1]3rd Department of Psychiatry, Aristotle University of Thessaloniki, GREECE and [2]Frederiksborg General Hospital Department of Psychiatry, Hillerod DENMARK

Email: Konstantinos N Fountoulakis* - kfount@med.auth.gr; Apostolos Iacovides - kfount@med.auth.gr; Soula Kleanthous - kfount@med.auth.gr; Stavros Samolis - kfount@med.auth.gr; Kyriakos Gougoulias - kfount@med.auth.gr; George St Kaprinis - kfount@med.auth.gr; Per Bech - gabean@fa.dk

* Corresponding author

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Abstract

Background: The aim of the current study was to assess the reliability, validity and the psychometric properties of the Greek translation of the Symptoms Rating Scale For Depression and Anxiety. The scale consists of 42 items and permits the calculation of the scores of the Beck Depression Inventory (BDI)-21, the BDI 13, the Melancholia Subscale, the Asthenia Subscale, the Anxiety Subscale and the Mania Subscale

Methods: 29 depressed patients 30.48 ± 9.83 years old, and 120 normal controls 27.45 ± 10.85 years old entered the study. In 20 of them (8 patients and 12 controls) the instrument was re-applied 1–2 days later. Translation and Back Translation was made. Clinical Diagnosis was reached by consensus of two examiners with the use of the SCAN v.2.0 and the IPDE. CES-D and ZDRS were used for cross-validation purposes. The Statistical Analysis included ANOVA, the Spearman Correlation Coefficient, Principal Components Analysis and the calculation of Cronbach's alpha.

Results: The optimal cut-off points were: BDI-21: 14/15, BDI-13: 7/8, Melancholia: 8/9, Asthenia: 9/10, Anxiety: 10/11. Chronbach's alpha ranged between 0.86 and 0.92 for individual scales. Only the Mania subscale had very low alpha (0.12). The test-retest reliability was excellent for all scales with Spearman's Rho between 0.79 and 0.91.

Conclusions: The Greek translation of the SRSDA and the scales that consist it are both reliable and valid and are suitable for clinical and research use with satisfactory properties. Their properties are close to those reported in the international literature. However one should always have in mind the limitations inherent in the use of self-report scales.

Background

The Symptoms Rating Scale for Depression and Anxiety (SRSDA) [1] is based on the Beck Depression Inventory-I (BDI-I) [2]. It has been enlarged to include 42 items (double the number of BDI items and apart from the original 21 BDI items it contains several subscales [3], like the Asthenia subscale [4], the Melancholia Inventory [1], the Anxiety Inventory [1], and the Mania subscale [1]. Simul-

taneously one can calculate the BDI-I-13 and BDI-I-21 scores. The composition of the SRSDA subscales is as follows:

1. The 21-item Beck Depression Scale includes items 1 8, 11, 13, 14, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 31, 32, 34, 41. These are scored: a = 0, b = 1, c = 2, d = 3.

2. The 13-item Beck Depression Scale includes items 1, 8, 11, 13, 14, 19, 20, 22, 28, 29, 32, 34 and 41. These are scored a = 0, b = 1, c = 2, d = 3.

3. The 12-item Melancholia Subscaleincludes items 8, 11, 13, 17, 19, 20, 21, 22, 26, 29, 32 and 34. These are scored a = 0, b = 1, c = 2, d = 3.

4. The 12-item Asthenia Subscale includes items 2, 5, 9, 17, 21, 24, 25, 27, 28, 29, 32 and 38. These are scored: a = 0, b = 1, c = 2, d = 3.

5. The 14-item Anxiety Subscale includes items 3, 4, 5, 12, 15, 17, 21, 24, 25, 27, 33, 39, 40 and 42. These are scored: a = 0, b = 1, c = 2, d = 3.

6. The 5-item Mania Subscale includes items which all are graded 6, 10, 16, 30, 37. These are scored a = -1, b = 0, c = 0, d = +1

The SRSDA is not widely used, unlike the Zung Depression Rating Scale [5], the Beck Depression Inventory-I (BDI-I) [2] or the CES-D [6]. In any case, all these scales are supposed to be used as screening tools rather and not as substitutes for an in-depth interview[7].

The **aim** of the current preliminary study was to assess the reliability, validity and psychometric properties of the Greek translation of the Symptom Rating Scale for Depression and Anxiety (SRSDA) and its subscales.

Methods

Materials

Twenty-nine (29) depressed patients (16 males and 13 females) aged 30.48 ± 9.83 years (range 18–59) suffering from Major Depressive disorder according to DSM-IV [8] and depression according to ICD-10 criteria [9], and 120 normal controls (78 males and 42 females) aged 27.45 ± 10.85 years (range 18–55) entered the study. In 20 of them (8 patients and 12 controls) the instrument was re-applied 1–2 days later.

Patients were free of any medication for at least two weeks and were physically healthy with normal clinical and laboratory findings (Electroencephalogram, blood and biochemical testing, thyroid function, test for pregnancy, B_{12} and folic acid).

Patients came from the inpatient and outpatient unit of the 3rd Department of Psychiatry, Aristotle University of Thessaloniki, University Hospital AHEPA, Thessaloniki, Greece. They were consecutive cases and were chosen because they fulfilled the above criteria.

Members of the hospital staff, and students composed the control group. A clinical interview confirmed that they did not suffer from any mental disorder and their prior history was free from mental and thyroid disorder. They were free of any medication for at least two weeks and were physically healthy.

All patients and controls provided written informed consent before participating in the study.

Methods

Translation and Back Translation was made by two of the authors; one of whom did the translation and the other who did not know the original English text did the back translation. The final translation was fixed by consensus of both authors. For the original English text of the scale see additional file 1. For the Greek translation see additional file 2.

Clinical Diagnosis was reached by consensus of two examiners. The Schedules for Clinical Assessment in Neuropsychiatry (SCAN) version 2.0 [10,11] and the International Personality Disorders Examination (IPDE) [12-15] were used. Both were applied by one of the authors (KNF) who has official training in a World Health Organization Training and Reference Centre. The IPDE did not contribute to the clinical diagnosis of depression, but was used in the frame of a global and comprehensive assessment of the patients. The second examiner performed an unstructured interview.

The Center for Epidemiological Studies-Depression (CES-D) [6] and the Zung Depression Rating Scale (ZDRS) [16] were applied to the subjects for purposes of cross-validation. The clinical diagnosis was used as the 'gold standard' for the validation of the SRSDA. The use of a semi-structured interview strengthens this approach, which however has certain inherent limitations.

Statistical Analysis

Analysis of Variance (ANOVA) [17], was used to search for differences between groups.

Item Analysis [18] was performed, and the values of Cronbach's alpha (α) for SRSDA subscales were calculated.

The Spearman Rank Correlation Coefficient (rho) was calculated to test the relationship between CES-D, ZDRS and SRSDA subscales and also to assess the test-retest reliabil-

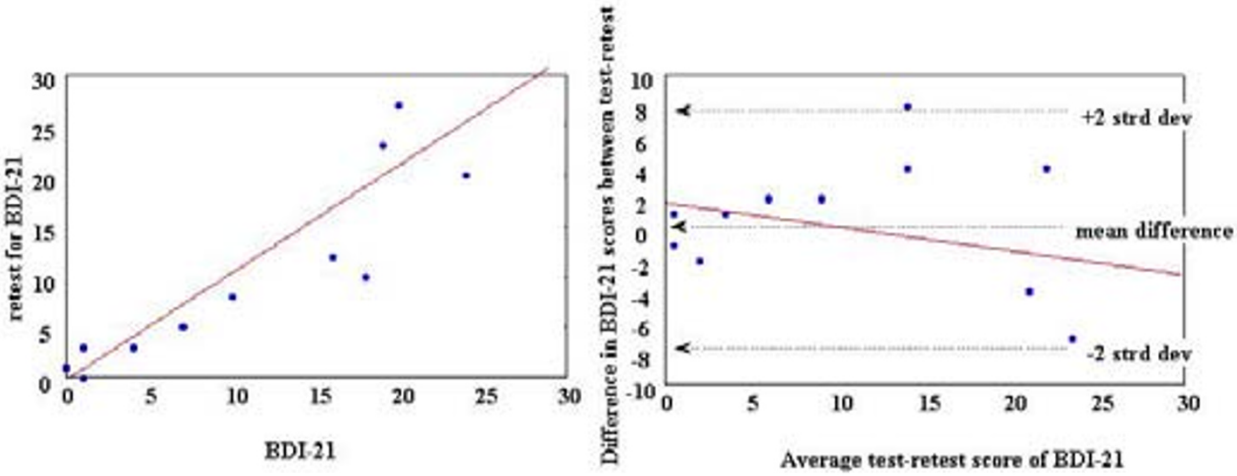

Figure 1
Bivariate scatterplots of the first vs second measurement and of the difference between measurements vs average value of measurements conceming the BDI-21 score. The points of the test-retest plot are very close to the regression line (which is a dichotomous) and the points of the difference vs. average are within the 2 SD from the mean difference (the scatterplots are based on test-retest data from 20 subjects, however some points overlap)

ity. However, the calculation of correlation coefficients is not a sufficient method to test reliability and reproducibility of a scale, because it is an index of correlation and not an index of agreement [17,19,20]. The calculation of means, standard deviations, averages and differences for each SRSDA subscale score during the 1st (test) and 2nd (retest) applications may provide an impression of the stability of results over time.

Also, the means and the standard deviations of the differences concerning each SRSDA subscale between test and retest were calculated and the plots of the test vs. retest and difference vs. average value for each variable were created. In fact it is not possible to use statistics to define acceptable agreement [17]. However these plots may assist decision. It is not possible to show all of these plots, but the respected concerning the total BDI-I-21 score is shown in figure 1. This method was used in previous studies concerning the validation of scientific methods [21].

Results

Patients and controls did not differ in age, however they differed concerning all the SRSDA subscales (table 1).

The calculation of sensitivity (Sn) and specificity (Sp) at various cut-off levels showed that the optimum cut-off points were: BDI-21: 14/15 (Sn = 0.90, Sp = 0.87), BDI-13: 7/8 (Sn = 0.93, Sp = 0.88), Melancholia: 8/9 (Sn = 0.87, Sp = 0.86), Asthenia: 9/10 (Sn = 0.87, Sp = 0.90), Anxiety: 10/11 (Sn = 0.90, Sp = 0.87).

Chronbach's alpha ranged between 0.86 and 0.92 for individual scales. More specifically: BDI-21: 0.92, BDI-13: 0.92, Melancholia: 0.89, Asthenia: 0.86, Anxiety: 0.88 and Mania: 0.12 (table 1).

It is obvious that only the Mania subscale had very low alpha (0.12), but the study sample was not appropriate for the validation of this subscale.

Both the ZDRS and the CES-D correlated highly with all SRSDA subscales. More specifically, the ZDRS Spearman coefficients were: with BDI-21: 0.84, BDI-13: 0.84, Melancholia: 0.82, Asthenia: 0.80, Anxiety: 0.82 and Mania: 0.37. The CES-D Spearman coefficients were: with BDI-21: 0.83, BDI-13: 0.81, Melancholia: 0.80, Asthenia: 0.77, Anxiety: 0.79 and Mania: 0.32. All the above correlations were significant at $p < 0.01$ (table 2).

The test-retest reliability was excellent for all scales with Spearman's R between 0.79 and 0.91. More specifically it was BDI-21: 0.90, BDI-13: 0.84, Melancholia: 0.88, Asthenia: 0.81, Anxiety: 0.79 and Mania: 0.91 (table 3).

The comparison between the values obtained during test vs. those obtained during retest revealed no differences

Table 1: Means, standard deviations and Cronbach's alpha conceming the Beck Depression Inventory (BDI-I)-21, BDI-I-13, the Melancholia Subscale, the Asthenia Subscale, the Anxiety Subscale and the Mania Subscale in depressed patients and controls

	controls N = 120		Depressed N = 29				
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**	**F**	**p-level**	**alpha**
Age	27.45	10.85	30.48	9.83	1.31	0.254	
BDI-I-21	8.16	7.65	28.65	10.95	122.24	0.000	0.92
BDI-I-13	3.56	4.37	17.43	7.95	143.56	0.000	0.92
Melancholia Subscale	4.51	4.63	17.22	7.46	115.55	0.000	0.89
Asthenia Subscale	4.87	4.51	16.35	5.73	118.64	0.000	0.86
Anxiety Subscale	5.64	5.19	19.13	6.52	121.23	0.000	0.88
Mania Subscale	-0.42	0.70	-0.09	0.29	6.61	0.011	0.12

(tables 4 and 5). The values that come from the division of the minimum and maximum difference to the standard deviation of the difference (table 5) is desirable to be generally between ±2. It is seems that some minor problems exist with melancholia and mania subscales The interpretion of the data shown in table 5 suggests that all subscales are reliable conceming test-retest. Figure 1 constitute a graphical representation of these results conceming BDI-I-21.

Discussion

The present study is a preliminary effort to obtain data concerning the psychometric properties of the Greek translation of the Symptom Rating Scale for Depression and Anxiety (SRSDA) and its subscales. The fact that results are only preliminary should be stressed out, because there is a need for further study concerning the properties of the scale in larger and more representative samples.

The use of self-report scales is frequent in psychiatric research. However, it is also well known that this kind of scales heavily depend on the co-operation and reading ability of the patient. It is also known that the theoretical background of their development influences their performance. On the other hand they save time for the clinician. The SRSDA is a comprehensive self-rating scale for depression both in community and clinical settings. The literature concerning its transcultural reliability and validity is limited. The current study reports observations on the reliability, the validity and the psychometric properties of the Greek translation of the SRSDA. The results suggest that this translation is well suited for use in the Greek population with high sensitivity and specificity, high test-retest reliability and high internal consistency.

The reliability and validity of the SRSDA has been tested in a limited number of studies and no translation of this scale has been published. This is in contrast to the large literature concerning the Zung Depression Rating Scale (ZDRS) [16,22-25] or the CES-D [6,26-30]. Of course there is a large body of research concerning the BDI, which is the backbone of the SRSDA.

Various translations of the BDI have been published and this scale was proved to be psychometrically strong and appropriate for use in Argentina [31], Mexico [32], Brazil [33], Malaya [34], Germany [35], Egypt [36] and Saudi Arabia [37], while a Greek version has been applied to neurological patients [38].

The present study reports that the best cut-off point for the BDI-13 is 7/8 and for the BDI-21 is 14/15. The literature is vast especially for the BDI-21 and opinions vary. It is reported that the best cut-off point for the BDI-21 is 13/14 [39], 21 [40], 18 [35], 13 [41], or 16 [42]. It seems that depending on the population, different cut-off points may be applicable.

When the BDI is used for the assessment of special populations, then the researcher should be very careful in the interpretation of the results. There are data concerning the use of the BDI in subjects with low education [43], postnatal depression [44], adolescent depression [45], geriatric patients [46,47], neurological patients [38], rheumatoid arthritis patients [32], chronic fatigue syndrome [48], Parkinson's disease [49] and dialysis patients [50].

Concerning the psychometric properties of the BDI, it seems that a single cut-off point is not feasible [39]. There are data suggesting that there is a 40% decline in BDI scores over 8 weeks, a main effect that accounts for approximately 10% of the variance. This may be due to repeated measurement alone, not due to any intervention. This change likely represents measurement error with this instrument rather than any "real" change in depression [51]. Shortcomings of the BDI are its high item difficulty, lack of representative norms, and thus doubtful objectivity of interpretation, controversial factorial validity, insta-

Table 2: Correlation between ZDRS, CES-D and SRSDA subscales. All correlations are significant at p < 0.001

	ZDRS	CES-D
BDI-I-21	0.84	0.83
BDI-I-13	0.84	0.81
Melancholia Subscale	0.82	0.80
Asthenia Subscale	0.80	0.77
Anxiety Subscale	0.82	0.79
Mania Subscale	0.37	0.32

Table 3: Spearman rho concerning test-retest results

	Spearman Rho
BDI-I-21	0.95
BDI-I-13	0.89
Melancholia Subscale	0.95
Asthenia Subscale	0.85
Anxiety Subscale	0.80
Mania Subscale	0.92

Table 4: Correlation coefficients concerning the test retest reliability of individual BDI items and total scores for BDI-13 and BDI-21. Items marked with an asterisk constitute the BDI-13 scale

SRDA item	R
Item 1*	0.52
Item 8*	0.88
Item 11*	0.64
Item 13*	0.22
Item 14*	0.74
Item 17	0.37
Item 18	1.00
Item 19*	0.35
Item 20*	0.64
Item 21	0.36
Item 22*	0.48
Item 23	0.89
Item 25	0.58
Item 26	0.49
Item 27	0.64
Item 28*	-0.05
Item 29*	0.78
Item 31	0.6
Item 32*	0.83
Item 34*	0.69
Item 41*	0.83
BDI-I-21	0.95
BDI-I-13	0.89

bility of scores over short time intervals (over the course of 1 day), and poor discriminant validity against anxiety. Advantages of the inventory are its high internal consistency, high content validity, validity in differentiating between depressed and nondepressed subjects, sensitivity to change, and international propagation [52]. Generally a two factor model solution is proposed for the BDI, but only the first (general) factor seems to be stable [53]. It is also reported that very low scorers on the BDI tend to respond in a "fake-good" manner on the Minnesota Multiphasic Personality Inventory (MMPI) validity scales. This findings was interpreted as evidence of poor "low-end specificity" for the BDI [54].

There is a great controversy concerning which kind of scales (self-report or observer-rating) is best. Although some authors favour the BDI over observer rating scales [55], it seems that it has only moderate relationship to observer rating scales like the MADRS and the HDRS [56-60]. This may mean that different aspects of depression are assessed by different instrument modalities, but also may mean that there is a need for a comprehensive and multimodal assessment of patients.

There is also a great debate concerning which one from the self report scales is best. Research provides no consistent data on the superiority of a specific scale over the others. It is reported that the BDI is equal to CES-D [40,61] there is a significant relationship between the BDI and the MMPI-D scale [62]. The comparison between the BDI, the Zung Self-Rating Depression Scale (SDS), and the Taylor Manifest Anxiety Scale (TMAS) for specificity and validity as measures of anxiety and depression and their relationship to the Neuroticism scale of the Eysenck Personality Inventory (EPI-N), suggest all four tests tap an emotionality factor of stability-instability [63].

Review studies on various self-administered instruments suggest that there is no significant difference among these scales in terms of performance and overall sensitivity is around 0.84 and specificity around 0.72 [64]. These instruments are of particular value in primary care settings because it is clear that primary care providers fail to diagnose and treat as many as 35% to 50% of patients with depressive disorders [65,66]. Depression is one of the most common psychiatric diagnoses in primary care populations [67]; major depressive disorders can be diagnosed in 6% to 9% of such patients. Obstacles to the appropriate recognition of depression include inadequate provider knowledge of diagnostic criteria; competing comorbid conditions and priorities among primary care patients; time limitations in busy office settings; concern about the implications of labelling; poor reimbursement mechanisms; and uncertainty about the value, accuracy, and efficiency of screening mechanisms for identifying

Table 5: Means, standard deviations, minimum and maximum for all SRSDA subscales conceming their test, retest, average and difference between the two applications. The two columns to the right represent the division of the minimum and maximum difference to the standard deviation of the difference. It is desirable these values to be generally between ±2. It is obvious that some minor problems exist with melancholia and mania subscales

	Valid N	Mean	Minimum	Maximum	Std. Dev.	Lower deviance in SDs	Upper deviance in SDs
BDI-I-21							
test	20	10.85	0.00	24.00	8.19		
retest	20	10.80	0.00	27.00	9.50		
average	20	10.83	0.50	23.50	8.65		
difference	20	0.05	-7.00	8.00	3.89	-1.80	2.06
BDI-I-13							
test	20	5.25	0.00	13.00	4.24		
retest	20	4.85	0.00	13.00	5.20		
average	20	5.05	0.00	11.50	4.55		
difference	20	0.40	-4.00	5.00	2.72	-1.47	1.84
Melancholia subscale							
test	20	6.30	0.00	16.00	4.78		
retest	20	6.40	0.00	17.00	5.40		
average	20	6.35	0.00	14.50	4.94		
difference	20	-0.10	-6.00	4.00	2.53	***-2.37***	1.58
Asthenia subscale							
test	20	6.05	0.00	12.00	4.11		
retest	20	6.40	0.00	14.00	4.89		
average	20	6.23	0.00	12.00	4.27		
difference	20	-0.35	-5.00	4.00	2.94	-1.70	1.36
Anxiety subscale							
test	20	6.75	0.00	17.00	5.54		
retest	20	7.65	0.00	19.00	6.53		
average	20	7.20	0.00	15.00	5.72		
difference	20	-0.90	-8.00	5.00	3.99	-2.01	1.25
Mania subscale							
test	20	-0.50	-2.00	0.00	0.69		
retest	20	-0.55	-2.00	0.00	0.69		
average	20	-0.53	-2.00	0.00	0.68		
difference	20	0.05	0.00	1.00	0.22	0.00	***4.55***

patients with depression. Given that 50% to 60% of persons seeking help for depression are treated exclusively in the primary care setting, accurate detection in this setting is important [68] and self-administered instruments may help to ameliorate some of them.

On the other hand, it should be noted that the diagnosis of depression is itself based on symptoms. A patient cannot be truly asymptomatic and have major depressive disorder. Thus, these screening questionnaires are actually being evaluated for their ability to detect unrecognized, rather than true asymptomatic, depressive symptoms and disease. They are also useful for the assessment of severity but not for the diagnosis per se.

It should be also stressed that the current study offers only preliminary data. The study sample is small; retest data are available for only 18 subjects and the factor analysis included both patients and controls. The complete validation demands the application of the scale in larger samples and more sophisticated methodology, including the use of borderline severity samples.

Conclusions

The Greek translation of the SRSDA and its subscales is both reliable and valid and is suitable for clinical and research use with satisfactory properties. Its properties are similar to those reported in the international literature. However one should always have in mind the limitations inherent in the use of self-report scales.

Competing Interests

None declared.

Authors' contributions

All authors participated in the collection, analysis, interpretation of data and writing of the paper

Per Bech participated only in the writing and final formatting of the paper.

Additional material

Additional File 1

English version of the SRSDA
Click here for file
[http://www.biomedcentral.com/content/supplementary/1471-244X-3-21-S1.doc]

Additional File 2

Greek translation of the SRSDA
Click here for file
[http://www.biomedcentral.com/content/supplementary/1471-244X-3-21-S2.doc]

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