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Y OTROS ESTRESORES**

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**Estructura dimensional del Brief Symptom Inventory
con estudiantes universitarios**

**Dimensional Structure of the Brief Symptom Inventory
with College Students**

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Estructura dimensional del Brief Symptom Inventory con estudiantes universitarios

El *Brief Symptom Inventory* (BSI; Derogatis, 1975; 1993) permite evaluar síntomas de trastornos psicológicos en jóvenes y adultos. En el presente trabajo se analizó la estructura dimensional del cuestionario mediante análisis factorial confirmatorio. La muestra utilizada fueron 1.033 estudiantes universitarios de entre 18 y 30 años, pertenecientes a distintas facultades y centros adscritos de la Universidad de Barcelona. Se testaron dos hipótesis: la distribución original de los ítems en nueve factores y la unidimensionalidad del cuestionario. Los resultados obtenidos parecen confirmar la estructura de nueve factores, si bien las fuertes correlaciones entre las subescalas indican que éstas evalúan constructos muy relacionados. Se observaron diferencias según el sexo y la edad de los estudiantes, con mayores puntuaciones en las mujeres en sintomatología somática y ansiosa, así como en aquellos síntomas relacionados con sentimientos de inferioridad y malestar social; y mayores puntuaciones en hostilidad en los estudiantes más jóvenes. Se constata la necesidad de desarrollar puntuaciones normativas de los instrumentos que evalúan psicopatología basadas en la cultura y el sexo.

Palabras clave: evaluación psicológica, análisis factorial confirmatorio, estudio instrumental, estudiantes universitarios, psicopatología.

Dimensional structure of the Brief Symptom Inventory with College students

The *Brief Symptom Inventory* (BSI; Derogatis, 1975; 1993) is designed to assess symptoms of psychological disorders in adolescents and adults. The dimensional structure of the inventory, using exploratory and confirmatory factor analyses, was examined in a Spanish sample of college students ($n = 1,033$, aged between 18 and 30 years old). Two hypotheses were tested: the original distribution of the items in nine factors, and the unidimensionality of the inventory. According to the results a nine-factor structure seemed to be confirmed, although the strong intercorrelations found among the subscales indicated that these were measuring closely-related constructs. Sex and age differences were found, with girls scoring higher than boys on subscales referred to somatic and anxiety-based symptoms, and also symptoms related to inferiority and social distress; and younger students scoring higher than older students on hostility. The importance of cultural influences when assessing psychological symptoms, and the need to develop national and sex norms for instruments that assess psychopathology, are also discussed.

Key words: psychological assessment, confirmatory factor analyses, instrumental study, college students, psychological disorders.



DIMENSIONAL STRUCTURE OF THE BRIEF SYMPTOM INVENTORY WITH COLLEGE STUDENTS

The Brief Symptom Inventory (BSI, Derogatis, 1975, 1993; Derogatis & Spencer, 1982) is a 53-item self-report questionnaire designed to offer rapid assessment of the symptoms of psychological disorders. Whilst acknowledging the limitations of self-report (Derogatis, 1975, 1993), the Brief Symptom Inventory offers all the advantages of this approach, which have been reported by its authors elsewhere (Derogatis, 1977; Derogatis & Melisaratos, 1983). Firstly, the inventory provides exclusive information from the person involved in the phenomena, which is ordinarily unavailable through other methods of evaluation. Secondly, it is economical in terms of professional time, since it can be used as a screening instrument to decide who requires specialized professional time, or to obtain rapid and valid information for both clinical and research purposes. It is also easy to score and interpret. Finally, norms have been established for adolescent and adult psychiatric and non-patient populations (Derogatis & Spencer, 1982), as well as for college-age youth (Cochran & Hale, 1985) and the elderly (Hale, Cochran, & Hedgepeth, 1984).

The Brief Symptom Inventory was developed as a brief form of the Symptom Checklist (SCL-90-R), a self-report clinical rating scale comprising 90 items that reflect nine primary symptom dimensions (Derogatis, 1977; Derogatis & Melisaratos, 1983). The Brief Symptom Inventory comprises those items from the SCL-90-R which best reflect the nine primary symptom dimensions (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism), along with four items of significant clinical interest but which are not subsumed under any of the primary symptom dimensions. It also presents the three original global indices of distress from the SCL-90-R: the Global Severity Index (GSI), the Positive Symptom Distress Index (PSDI) and the Positive Symptom Total (PST).

The questionnaire has been developed and used in a wide variety of settings and applications, such as discriminating between violent and nonviolent male relationship partners (Gavazzi, Julian, & McKenry, 1996); assessing psychological distress following a traumatic event (Allen, Coyne, & Console, 1996; Allen, Coyne, & Huntoon, 1998), such as rape (Frazier & Schauben, 1994), or a natural disaster (Cook & Bickman, 1990); measuring psychological response and distress with respect to physical illness and disability (Cella & Tross, 1986; Granger, Cotter, Hamilton, Fiedler, & Hens, 1990; Hinkeldey & Corrigan, 1990; Northouse, 1989); assessing age differences in psychological symptoms (Hale & Cochran, 1992; Hale et al., 1984); measuring psychological distress in college students (Hayes, 1997; Osman, Barrios, Longnecker, & Osman, 1994; Osman, Barrios, Osman, & Markway, 1993; Sher, Wood, & Gotham, 1996); and assessing college students who were victims of child sexual abuse (Bennett & Hughes, 1996; Braver, Bumberry, Green, & Rawson, 1992).



It has also been used to assess ethnic differences in psychological symptoms between Caucasian Americans and Asians (Cheng, Leong, & Geist, 1993), Caucasian Americans, Latinos and African Americans (Hemmings, Reimann, Madrigal, & Velasquez, 1998), Caucasian Americans and Hispanic Americans (Acosta, Nguyen, & Yamamoto, 1994), Canadians and Indians (Watson & Sinha, 1999), and Irish, Polish and Filipinos (Aroian, Patsdaughter, Levin, & Gianan, 1995). In addition, the Brief Symptom Inventory has frequently been used as an index of clinical change or improvement, and treatment outcome in adults (Carscaddon, 1990; Piersma, Reaume, & Boes, 1994) and adolescents (Handal, Gist, Gilner, & Searight, 1993).

The Brief Symptom Inventory has been translated and adapted into several languages and for different cultures including Italian (De Leo, Frisoni, Rozzini, & Trabucchi, 1993), British (Francis, Rajan, & Turner, 1990), Israeli (Canetti, Shalev, & Kaplan, 1994; Gilbar, & Ben-Zur, 2002) Hindi (Watson & Sinha, 1999) and Spanish (Aragón, Bragado, & Carrasco, 2000; Ruipérez, Ibáñez, Lorente, Moro, & Ortet, 2001), and shows reliable and valid psychometric properties.

Although the questionnaire was designed to measure psychiatric symptoms multidimensionally, the factor structure obtained by a number of researchers has shown variations with respect to the original form. Derogatis and Melisaratos (1983) reported a structure of nine factors and stated that although there were certain minor differences between the empirical factor structure and the hypothesized dimensional structure, there was more agreement than disagreement between the two. However, structures of five factors (Johnson, Murphy, & Diamond, 1996), six factors (Hayes, 1997; Ruipérez et al., 2001), and one single factor of general distress (Piersma, Boes, & Reaume, 1994; Aragón et al., 2000) have also been reported.

Johnson and colleagues (1996) applied the Brief Symptom Inventory to parents of children who had recently died by violent means. In this case, a five-factor solution was more appropriate since some dimensions (such as Obsessive-Compulsive and Depression) combined to reflect the disruption associated with bereavement.

In addition, Hayes (1997) stated that for college and university counseling center clients, the Brief Symptom Inventory seems to measure neither nine specific types of psychopathology nor general distress. The author obtained data indicating that the Brief Symptom Inventory measures six types of problems in counseling center clients: depression, somatization, hostility, social comfort, obsessiveness-compulsivity, and phobic anxiety. Somatization, hostility and obsessiveness-compulsivity clearly replicated the Brief Symptom Inventory's factor structure for the same constructs. However, depression, phobic anxiety and social comfort involved items from different subscales of the original structure.

Ruipérez et al. (2001) also defended, for non-clinical Spanish populations, the six-factor structure: depression, phobic anxiety, paranoid ideation, obsession-compulsion, somatization, and hostility/

aggressivity. None of the subscales replicated the original Brief Symptom Inventory's factor structure. However, the authors did not include two items from the original BSI in their analyses (items 7 and 9). They concluded that the six-factor solution was not incompatible with the use of the Brief Symptom Inventory as a measure of general psychological distress.

The study of Boulet and Boss (1991), and that of Piersma, Boes, et al. (1994) with adult and adolescent in-patients, supported the idea that it would be more beneficial to use a single composite score for clinical or research practice, since one factor accounts for most of the variation among symptom dimensions on the Brief Symptom Inventory. Aragón et al. (2000) replicated the studies of Boulet and Boss (1991) and Piersma, Boes, et al. (1994) with Spanish parents of children under psychiatric care. The authors argued that the Brief Symptom Inventory measures a unidimensional construct of general psychological distress, as although they obtained a four-factor solution in the exploratory factor analysis, the first factor accounted for more than 68% of the total variance (85%) (Aragón et al., 2000).

Variations in factor structure have mainly been attributed to differences in the factor analysis procedure (Haynes, 1997; Ruipérez et al., 2001), and also to the use of different samples (e.g., college students, psychiatric in-patients, the elderly). Thus, the proposed factor structure of the Brief Symptom Inventory appears to require further research (Haynes, 1997; Ruipérez et al., 2001).

The main aim of the present study was to examine the dimensional structure of the Spanish adaptation of the Brief Symptom Inventory in a non-clinical sample of college students. The nine-factor structure proposed by Derogatis and colleagues (Derogatis & Melisaratos, 1983; Derogatis & Spencer, 1982), and the unidimensionality proposed by others (Aragón et al., 2000; Boulet & Boss, 1991; Piersma, Boes, et al., 1994) were tested with a confirmatory factor analysis. The internal consistency reliability of the Spanish version is reported. Sex and age differences were examined.

METHOD

Participants

The Spanish version of the Brief Symptom Inventory was applied to a non-clinical sample of 1,033 undergraduate students attending the University of Barcelona, ranging in age from 18 to 30.6 years old ($M = 22.1$; $SD = 31.46$). The sample was composed of 317 males (30.7%), of mean age 22.3 years ($SD = 31.82$), and 716 females (69.3%), of mean age 22 years ($SD = 31.28$).

Participants were randomly recruited from different Faculties and Schools at the University of Barcelona, and a proportional sample from each Academic Division was obtained (academic year 2001/2002): Human and Social Sciences (Faculties of Philology, Geography, Archaeology and



History; with 188 from 11,236 students); Legal, Economic and Social Sciences (Faculties of Social Work, Business Studies, Criminology and Law; with 323 from 23,272 students); Experimental and Mathematical Sciences (Faculties of Chemistry and Mathematics; with 144 from 7,464 students); Health Sciences (Faculties of Medicine and Psychology; with 154 from 8,526 students); Education Sciences (Faculties of Library and Documentation, and Teacher Training; with 113 from 5,918 students). A small sample from the Associated Schools (Cinema Studies and Sports Studies) was also obtained (111 from 6,097).

Measure

The Brief Symptom Inventory (Derogatis, 1975; 1993) includes 53 items grouped into nine scales and is designed to assess nine primary dimensions of psychopathological symptoms: somatization (SOM), obsessive-compulsive (O-C), interpersonal sensitivity (I-S), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), and psychoticism (PSY). In addition, three global indices assess a patient's general distress: Global Severity Index (GSI), an indicator of the current overall level of distress; Positive Symptom Distress Index (PSDI), a measure of intensity adjusted by the number of symptoms endorsed; and Positive Symptom Total (PST), the total number of endorsed symptoms.

The inventory can be completed in ten minutes (Derogatis & Melisaratos, 1983), and it is rated on a 5-point scale of distress, ranging from «not at all» (0) to «extremely» (4). The standard time set given with the Brief Symptom Inventory is «the past seven days including today», although other specific periods of time may be established (Derogatis, 1977; Derogatis & Spencer, 1982).

Earlier data for the Brief Symptom Inventory show an acceptable internal consistency ranging from .71 on the PSY dimension to .85 on DEP (Derogatis & Melisaratos, 1983; Derogatis & Spencer, 1982). Other studies with different samples have found a similar internal consistency for the nine original dimensions (Aragón et al., 2000; Aroian et al., 1995; Broday & Mason, 1991; Canetti et al., 1994; Gilbar & Ben-Zur, 2002; Hayes, 1997; Ruipérez et al., 2001; Watson & Sinha, 1999). The internal consistency for the three global indices has been also calculated (GSI: .90; PSDI: .87; PSTS: .80), showing a good reliability of the measure over time, especially for the GSI (Derogatis & Melisaratos, 1983; Derogatis & Spencer, 1982). Other studies have also shown excellent reliability coefficients on the GSI (Aragón et al., 2000; Aroian et al., 1995; Canetti et al., 1994; Gilbar & Ben-Zur, 2002; Johnson et al., 1996; Ruipérez et al., 2001; Watson & Sinha, 1999) (see Table 1).

Table 1.
Internal Consistency for the Brief Symptom Inventory

Authors and year of publication	Nationality	Sample characteristics		Mean age	Internal Consistency (α)	
		Population	n		Subscales	GSI
Derogatis & Spencer (1982)	North-American	Adults non-patient	719	46 \pm 14.7	.71 (PSY) to .85 (DEP)	.90
Brodady & Mason (1991)	North-American	Counseling Center clients	343	24 yrs. old	.70 (PSY) to .88 (DEP)	-
Johnson et al. (1996)	North-American	Bereaved parents	260	?	.63 (INT) to .83 (ANX)	.97
Hayes (1997)	North-American	Counseling Center clients	2,078	23.2 \pm 6.2	.66 (PHOB) to .86 (DEP)	-
Aragón et al. (2000)	Spanish	Parents of children attending a Counseling Center	743	40.5 yrs. old	.87 (PHOB) to .96 (SOM)	.98
Ruipérez et al. (2001)	Spanish	Undergraduate students and nonstudents	254	28 yrs. old	.70 (HOS) to .91 (DEP)	.95
Gilbar & Ben-Zur (2002)	Israeli	Adults non-patient	510	45.6 \pm 8.61	.71 (PSY) to .83 (SOM)	.96
Canetti et al. (1994)	Israeli	High School students	840	16.77 \pm .99	.66 (PSY) to .83 (DEP)	.95
Watson & Sinha (1999)	Indian	Undergraduate students	199	19.6 \pm 2.32	.59 (PAR) to .73 (SOM & DEP)	.95
	Canadian	Undergraduate students	347	20.08 \pm 1.41	.70 (PSY) to .86 (DEP)	.95
Arojan et al. (1995)	Polish	Adults non-patient	25	43.9 \pm 15.2	.48 (PSY) to .91 (ANX)	.96
	Filipino	Adults non-patient	29	37.4 \pm 11.2	.57 (PSY) to .88 (HOS)	.96
	Irish	Adults non-patient	25	33.9 \pm 9.6	.85 (PSY) to .97 (PHOB)	.99



Procedure

Adaptation of the BSI - The Spanish translations of the Brief Symptom Inventory carried out previously by Aragón et al. (2000), and Ruipérez et al. (2001) were analyzed; however, these studies did not report the process of translation, and some of the translated items did not correspond fully to the content of the original English items. In addition, Ruipérez et al. (2001) did not include three items from the original BSI in their analyses (items 7, 9, and 53). Also, the use of the respectful third person pronoun (*usted*) was not suitable for college students. The need for a new adaptation was therefore confirmed. A new translation of the Brief Symptom Inventory, both forwards and backwards, was done by two psychologists from the University of Barcelona who were fluent in both English and Spanish. The third person pronoun (*usted*) was also changed to a more informal form (*tú*) in keeping with the young sample of our study. The correspondence between the original inventory and the forward and back translations was assessed by a clinical psychologist, who agreed with the content of the items in the Spanish version.

Application of the instrument - Verbal consent to participate in the study was obtained from the directors of the Faculties and Schools of the University of Barcelona. The objective of the study was explained to the students, and they all provided informed consent; none of them refused to participate. The inventory was anonymous and administered in groups of 20 to 90 students. Confidentiality of the data was assured. The time set given with the Brief Symptom Inventory was «the past month including today», since it was administered as part of a comprehensive battery of questionnaires with this period of reference. Upon completion of the study a summary containing the most significant results was given to the director of studies. In addition, a counseling service was offered to the students who had participated.

Data analysis

Two confirmatory factor analyses were carried out in order to test the original nine-factor structure proposed by Derogatis and Melisaratos (1983), and the unidimensionality hypothesized by other authors (Aragón et al., 2000; Boulet and Boss, 1991; Piersma, Boes, et al., 1994). The method of parameter estimation used in the confirmatory factor analyses was elliptic robust least squares (ERLS), due to the nature of the items (Likert format and biased distribution) (Bentler and Dijkstra, 1985). The analyses did not include the Additional Items since the authors (Derogatis & Spencer, 1982) argue that they are not hypothesized to have univocal loadings on any of the nine primary Brief Symptom Inventory dimensions.

The internal consistency reliability of the Spanish version was reported. In addition, a multivariate analysis of variance was conducted in order to test for sex differences. Age of the students was correlated with the BSI subscales.

The data obtained were analyzed with the SPSS version 11.0 and EQS version 6.1 statistical packages.

RESULTS

Sample characteristics

A significant relationship was found between sex and Schools ($\chi^2 = 77.57, p < .01$). There were more females ($n = 716$) than males ($n = 317$) in the sample, with the exception of the Associated Schools, although this is in accordance with the number of female students at the University of Barcelona.

The medians for the scores on each item were all below the midpoint of the scale and ranged from 0 to 2 (with standard deviations of .58 and 1.11). The sample used all the scores (from 0 to 4) to mark each item, with the exception of item number 2, «*Faintness or dizziness*» (from 0 to 3).

Descriptive data applied to the subscales are shown in Table 2. The means for the subscales were also below the midpoint of the scale. These results were expected since the questionnaire was applied to a non-clinical sample.

Table 2.

Means and standard deviations by sex for the Spanish version of the Brief Symptom Inventory

Scales	Spanish college Sample			
	Male		Female	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SOM	.38	.49	.56	.53
O-C	1.00	.70	1.01	.71
I-S	.76	.74	.98	.85
DEP	.83	.71	.96	.79
ANX	.80	.63	1.00	.65
HOS	.77	.70	.79	.69
PHOB	.34	.53	.42	.56
PAR	.75	.70	.81	.69
PSY	.62	.66	.69	.69
GSI	.70	.50	.81	.53
<i>n</i>	317		716	



Internal Structure

Confirmatory Factor Analysis- The confirmatory factor analysis carried out tested two different hypothetical structures: the original nine-factor solution and the unidimensional structure, as previously described.

As Table 3 shows, the indices of adjustment for the two confirmatory factor analyses indicated a good adjustment for the nine-factor model, and the unidimensional model (*BBNFI*, *BBNNFI*, *CFI*, *IFI*, *RMR*, *SRMR*, and *SMSEA*). The values for the various fit indices were in line with those suggested by Russell (2002). However, it is worth noting that the nine-factor structure was significantly better than the unidimensional structure, as shown by the test of chi-square ($\Delta \chi^2 = 2999.44$, $p < .001$). The structural parameters estimated for the two models were significant, their standardized values ranging between .33 and .83.

Table 3.
Fit Index for the nine-factor and unifactorial model for the confirmatory factor analysis

Fit index	Nine Factors	One Factor
	(n = 1.033)	(n = 1.033)
	3868.834	6868.269
χ^2	d.f. = 1091	d.f. = 1127
	$p < .00001$	$p < .00001$
<i>BBNFI</i>	0.948	0.908
<i>BBNNFI</i>	0.959	0.919
<i>CFI</i>	0.962	0.922
<i>IFI</i>	0.962	0.922
<i>RMR</i>	0.047	0.055
<i>SRMR</i>	0.051	0.061
<i>RMSEA</i>	0.050	0.070
Models' comparison		
	$\Delta \chi^2$	$\Delta d.f.$
1-9	2999.435	36
		p
		< .001
Tuker Lewis Index		
1-9		0.500

χ^2 : chi square; *d.f.*: degrees of freedom; *BBNFI*: Bentler-Bonett normed fit index; *BBNNFI*: Bentler-Bonett non-normed fit index; *CFI*: comparative fit index; *IFI*: Bollen fit index; *RMR*: root mean squared residual; *SRMR*: standardized root mean squared residual; and *RMSEA*: root mean.

In accordance with the results obtained in the confirmatory factor analysis, and following Derogatis and Melisaratos (1983) original distribution, it was decided to choose a nine-factor model for further analysis.

Correlations

The correlation matrix among subscales was calculated. As can be seen in Table 4, correlations among subscales were moderate-to-high.

Internal Consistency

Internal consistency for the subscales was calculated using Cronbach's α coefficient. The reliability was calculated following Derogatis (1975; 1993) distribution of the items in the nine subscales. The subscales showed moderate reliability indices: .74 for SOM, .79 for O-C, .80 for I-S, .84 for DEP, .77 for ANX, .78 for HOS, .72 for PHOB, .73 for PAR, .72 for PSY, and .95 for GSI.

Differences within groups

To test the differences between means for 'sex', a multivariate analyses of variance was conducted with sex as the independent variable and the nine subscales as dependent variables. The Kolmogorov-Smirnov test applied to the scale scores yielded z values ranging from 7.59 for *Phobic Anxiety* ($p < .001$), to 3.58 for *Obsessive-Compulsive* ($p < .001$), so data were not normally distributed on any subscale and presented positive asymmetry. Therefore, a square root conversion for each subscale was carried out before subsequent analysis (Hair, Anderson, Tatham, & Black, 2001). The conversion did not normalized any subscale. However, a Box test showed that a multivariate analysis of variance (MANOVA) could acceptably be applied to the standardized data (Box test before conversion: $F = 1,46$ $p = .023$; Box test after conversion: $F = .859$; $p = .737$). The test showed significant differences between sexes on Somatization ($F(1, 1031) = 34.75$, $p < .001$), Interpersonal Sensitivity ($F(1, 1031) = 22.57$, $p < .001$), Depression ($F(1, 1031) = 7.26$, $p < .01$), Anxiety ($F(1, 1031) = 27.18$, $p < .001$), and Phobic Anxiety ($F(1, 1031) = 7.49$, $p < .01$) scales, with females scoring higher than males.

The correlation matrix among subscales and age also showed a significant relationship, with younger students scoring higher than older students on HOS ($r = .097$; $p < .01$).

DISCUSSION

This research has presented the dimensional structure and internal consistency of the Brief Symptom Inventory (Derogatis, 1975), a scale that provides a rapid and reliable way of measuring symptoms of psychological distress in Spanish college samples.

The results showed that the range of scoring described by the original authors (Derogatis & Melisaratos, 1983; Derogatis & Spencer, 1982) seems appropriate for this sample, since participants



Table 4.
Correlations for the original distribution of the items in nine subscales

	F1 SOM	F2 O-C	F3 I-S	F4 DEP	F5 ANX	F6 HOS	F7 PHOB	F8 PAR	F9 PSY
F1 SOM	---								
F2 O-C	.523**	---							
F3 I-S	.447**	.563**	---						
F4 DEP	.466**	.592**	.708**	---					
F5 ANX	.607**	.613**	.592**	.634**	---				
F6 HOS	.449**	.472**	.515**	.570**	.557**	---			
F7 PHOB	.519**	.478**	.526**	.501**	.592**	.378**	---		
F8 PAR	.432**	.513**	.648**	.586**	.545**	.566**	.494**	---	
F9 PSY	.486**	.577**	.706**	.810**	.620**	.547**	.550**	.631**	---

** Significant at $p < .01$

responded using all the possible choices from the 5-point scale.

The good fit index values obtained in the confirmatory factor analysis for the nine-factor solution showed the adequacy of the original structure hypothesized by the authors in contrast to the unidimensional structure suggested by others (Aragón et al., 2000; Boulet and Boss, 1991; Piersma, Boes, et al., 1994). In addition, a distribution of the items in nine subscales allows to do a more accurate clinical screening and to better distinguish between different psychological profiles than just a total score. However, the strong intercorrelations among the subscales, as well as the high internal consistency of the GSI for the total group, indicated that these were measuring closely-related constructs (Ruipérez et al., 2001).

The reliability coefficients obtained were acceptable and were similar to those reported by other studies (Aragón et al., 2000; Aroian et al., 1995; Broday & Mason, 1991; Derogatis & Melisaratos, 1983; Derogatis & Spencer, 1982; Gilbar & Ben-Zur, 2002; Hayes, 1997; Ruipérez et al., 2001).

The sample presented several differences in relation to sex, with female students scoring significantly higher than male students on Somatization, Interpersonal Sensitivity, Depression, Anxiety, and Phobic Anxiety. The results are consistent with numerous studies that have applied the scale, and indicate that women may display more somatic and anxiety-based symptoms, and also symptoms related to inferiority and social distress (Canetti et al., 1994; De Leo et al., 1993; Derogatis & Melisaratos, 1983; Francis et al., 1990; Gilbar & Ben-Zur, 2002; Hale et al., 1984). Although these results were not found in Cochran and Hale's (1985) college sample, they were reported in Hayes's (1997) study of college and university students attending a counseling center. As stated elsewhere (Canetti et al., 1994; Watson & Sinha, 1999), differences in willingness to report psychological symptoms are often cited as an explanation for sex differences in psychological symptomatology.

Also, a significant difference was found in relation to age, with a decline of hostility in females and males (De Leo et al., 1993). This result is consistent with other studies which have found a decrease on general distress measured by the BSI in students over the course of 4 years of college (Sher et al., 1996).

Conclusions

The psychometric properties of the Brief Symptom Inventory found in the present study confirmed the original nine-factor structure presented by the authors (Derogatis & Melisaratos, 1983). In addition, in terms of screening accuracy the original nine-factor distribution should be considered the best solution.

The results underline the importance of developing specific norms for college and national samples, and also for different sex groups. Additional research with different samples is needed to document further the validity and utility of this scale and its internal structure.



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