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(Article begins on next page)

**The Concept of Psychological Distress and its Assessment:**

**A Clinimetric Analysis of the SCL-90-R**

Danilo Carrozzino<sup>1</sup>, Chiara Patierno<sup>1</sup>, Claudia Pignolo<sup>2</sup>, and Kaj Sparle Christensen<sup>3</sup>

<sup>1</sup>Department of Psychology “Renzo Canestrari”, University of Bologna

<sup>2</sup>Department of Psychology, University of Turin

<sup>3</sup>Research Unit for General Practice and Section for General Medical Practice, Department of Public Health, Aarhus University

**Author Note**

Danilo Carrozzino <https://orcid.org/0000-0002-8164-8671>

Chiara Patierno <https://orcid.org/0000-0002-7043-8126>

Claudia Pignolo <https://orcid.org/0000-0002-6977-224X>

Kaj Sparle Christensen <https://orcid.org/0000-0002-0409-2702>

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Correspondence concerning this article should be addressed to Danilo Carrozzino, Department of Psychology “Renzo Canestrari”, Alma Mater Studiorum - University of Bologna, Viale Berti Pichat 5, 40127, Bologna, Italy. Email: [danilo.carrozzino@unibo.it](mailto:danilo.carrozzino@unibo.it)

**The Concept of Psychological Distress and its Assessment:**

**A Clinimetric Analysis of the SCL-90-R**

### **Abstract**

A number of studies have been conducted on psychological distress but there are still controversial issues, concerned with the clinical conceptualization and assessment of this construct, that need to be addressed. Clinimetrics and its Clinimetric Patient-Reported Outcome Measures (CLIPROM) criteria represent an innovative methodological framework for the evaluation of measurement properties and clinical phenomena, which are not included in the customary taxonomy. The SCL-90-R is one of the most widely used measures of psychological distress but its clinimetric properties have not been sufficiently investigated. A Rasch analysis following CLIPROM criteria was performed to evaluate whether the SCL-90-R and its clinical subscales were valid indices of the underlying dimensions or conceptualizations of psychological distress that they intended to measure. The clinimetric sensitivity of the SCL-90-R was also estimated. The total score of the SCL-90-R was found to have a Person Separation Reliability Index of 0.94. The somatization and depression subscales fitted the Rasch model expectations and paired *t*-tests revealed that all the subscales of the SCL-90-R were unidimensional. Our findings indicate that the total score of the SCL-90-R as an overall indicator of psychological distress can be used as a first-line screening measure to differentiate healthy stress from psychological distress, and to identify those at risk of psychiatric complications. This global index should be supplemented by the SCL-90-R subscales that were found to cover a wide spectrum of symptoms of psychological distress. These subscales can be used as dimensional measures to assess the severity of specific manifestations of psychological distress.

*Keywords:* assessment, clinimetrics, psychological distress, SCL-90-R, validity

## **The Concept of Psychological Distress and its Assessment:**

### **A Clinimetric Analysis of the SCL-90-R**

The term distress has a Latin origin and results from the combination of two words: *dis* meaning apart/asunder and *stringere*, which means tight and strain. In medieval language and old French, the word distress was consistently used as a noun to indicate distraining or the condition of being distrained (Rhodes & Watson, 1987). The first definition of subjective distress is generally ascribed to the Roman philosopher Cicero who described it as a shrinking together of the soul in conflict with reason (Buch-Hansen, 2010). It took a long time before this concept was approached in clinical terms (Lazarus, 1966; Selye, 1974) and defined as a unique discomforting emotional state experienced by an individual in response to a specific stressor or demand that results in harm, either temporary or permanent, to the person (Ridner, 2004). Over the years, many alternative definitions of psychological distress have been proposed (Drapeau et al., 2010; Gadalla, 2009; Horwitz, 2007; Phillips, 2009) but in most of them the perceived inability to cope with a stressor associated with feelings of discomfort, anguish, suffering, and misery appears to be a core feature. Psychological distress has also been conceived as a so subjective experience that no one can judge it but the patient (Parloff et al., 1954; Rhodes & Watson, 1987; Ridner, 2004). Consistent with this assumption (Parloff et al., 1954; Ridner, 2004), a number of Patient-Reported Outcome Measures (PROMs) have been developed to improve the detection of the patients' subjective experience of psychological distress (Kellner & Sheffield, 1973; Kessler et al., 2002; Roth et al., 1998; Sonino & Fava, 1998; Zung, 1983). The Hopkins Symptom Checklist (HSCL) is one of the most widely used PROMs of psychological distress (Bech, 2016). The HSCL takes its name from the Johns Hopkins University Hospital in Baltimore, where more than 60 years ago this rating scale was used as an outcome measure for evaluating the efficacy of psychotherapy in neurotic patients presenting with symptoms of psychological distress (Bech, 2016). The first version of the HSCL was developed by Parloff et al. (1954) and consisted of 41 items. Over the time, many modifications have been proposed and several versions of the HSCL developed (Derogatis et al., 1974; Lipman et al., 1979; Mollica et al., 1987; Schmalbach et al., 2021). The versions that are available vary not only in the number and wording of items but also from a clinical perspective. The ultimate version of the HSCL, the SCL-90-R, is the most comprehensive from a

clinical point of view as it has been found to cover a wide spectrum of self-reported symptoms of psychological distress (Bech & Timmerby, 2018; Carrozzino et al., 2016). Many studies have been conducted to evaluate the measurement properties of the SCL-90-R but in most of them the validation process relied on classical psychometrics (Müller et al., 2010; Prunas et al., 2012; Vassend & Skrondal, 1999). It has been shown that the exclusive reliance on classical psychometric theory is likely to clash with the complexity of clinical reality, because of its quest for homogeneity of components and inadequate attention to the clinimetric properties of rating scales to be used in clinical research and daily practice with patients (Charlson et al., 2022; Cosci, 2021; Fava, 2022; Fleck et al., 2019). It was Alvan R. Feinstein (1982, 1987) who originally coined the term “clinimetrics” to introduce an innovative approach that has been defined as the science of clinical measurements (Fava et al., 2012). Clinimetrics is a scientific domain with a set of methodological principles that apply to the evaluation of measurement properties (e.g., scalability) and clinical issues (e.g., severity, staging), which did not find room in the classical psychometric model (Bech, 2012; Fava et al., 2018). Such principles have been recently refined with the introduction of Clinimetric Patient-Reported Outcome Measures (CLIPROM) criteria, which challenge the traditional views of how new and existing PROMs should be developed/improved, and validated (Carrozzino et al., 2021). According to CLIPROM criteria (Carrozzino et al., 2021), Item Response Theory (IRT) models (i.e., Rasch and Mokken analyses) are used to evaluate the construct validity or dimensionality of PROMs. The clinimetric analysis of construct validity refers not only to the examination of the extent to which a rating scale is a valid measure of the severity of the clinical dimension under evaluation but also to the assessment of whether each item included in a rating scale belongs to an underlying clinical dimension and provides unique/distinctive clinical information (Carrozzino et al., 2021).

Bech and his research group provided an outstanding contribution to this field, conducting one of the first clinimetric analyses of the SCL-90-R (Carrozzino et al., 2016). It should be noted, however, that CLIPROM criteria (Carrozzino et al., 2021) were partially addressed by investigators, who only used the Mokken analysis to test the construct validity of the SCL-90-R (Carrozzino et al., 2016). Mokken analysis is a weaker test than the Rasch one since external factors such as age and gender of participants are not

included as part of the analysis in the same way as in the Rasch model (Bech, 2012). According to CLIPROM criteria (Carrozzino et al., 2021), Rasch analysis also allows to estimate the clinimetric sensitivity of PROMs, testing the ability of rating scales to detect changes in clinical (i.e., drug or psychotherapy) trials, to discriminate an active treatment from placebo, to differentiate patients from healthy controls, and to discriminate between different groups of patients (Kellner & Sheffield, 1973). The clinimetric properties of construct validity and sensitivity of the SCL-90-R have not been sufficiently investigated, implying that there is a need for a reanalysis of this rating scale following CLIPROM criteria (Carrozzino et al., 2021).

### **Aims**

A Rasch analysis was conducted according to CLIPROM criteria (Carrozzino et al., 2021) to evaluate the construct validity and clinimetric sensitivity of the SCL-90-R. Construct validity was tested to determine whether the SCL-90-R and its clinical subscales were valid indices of the underlying dimensions or conceptualizations of psychological distress that they intended to measure. The clinimetric sensitivity was also assessed, particularly to evaluate the ability of the SCL-90-R to discriminate between participants with different levels of psychological distress.

### **Methods**

#### **Sample**

A large sample of 1000 participants (mean age of  $48 \pm 17.3$  years), who were randomly recruited from the Italian general population, was used in the present study. Five hundred and eleven (51.1%) were females. Trained clinical psychologists from different Italian universities collected the data. The inclusion criterion was age between 18 and 89 years. Participants were excluded if they had cognitive deficits or other impairments affecting their reading and understanding abilities. Further details on sample characteristics and recruitment procedures are reported elsewhere (Carrozzino et al., 2016; Pignolo et al., 2018). Respondents had to sign a written informed consent for study participation. The study was conducted in compliance with APA ethical standards (American Psychological Association, 2002) and in accordance to the Declaration of Helsinki. The study also received the ethical approval by the Institutional Review Board of the University of Perugia, Perugia, Italy.

## Measure

The SCL-90-R (Derogatis, 2008) is a self-reported questionnaire consisting of 90 items rated on a 5-point Likert scale ranging from 0 (i.e., not at all) to 4 (i.e., extremely). All items are negatively worded to cover bodily and emotional or affective components of psychological distress (Bech, 2016). The respondent is asked to report how much a given item (i.e., symptom) distressed or bothered him/her during the last week (Derogatis, 2008). The Italian version of the SCL-90-R (Prunas et al., 2012) was used in the present study. The items of the SCL-90-R clinical subscales (Carrozzino et al., 2016) are reported in the appendix.

## Statistical analyses

Rasch analysis was performed using the Rasch Unidimensional Measurement Models (RUMM2030) software (Andrich et al., 2010) to evaluate the following clinimetric properties: 1) the overall fit to the Rasch model, which was tested using the chi-square item-trait interaction statistics (Pallant & Tennant, 2007; Tennant & Conaghan, 2007). The overall fit provided a summary measure of how the scale under examination conforms to the Rasch model expectations (Nielsen et al., 2017). A non-significant chi-square probability value indicated a good level of overall fit (Pallant & Tennant, 2007; Tennant & Conaghan, 2007). 2) Individual item and person fit: standardized fit residual values for items and subjects were examined for any indication of misfit (i.e., values outside  $\pm 2.5$ ) (Christensen et al., 2017). 3) Dimensionality or construct validity: to determine whether the SCL-90-R was a valid measure of the underlying construct of psychological distress, Principal Component Analysis (PCA) of residuals was performed to identify the two most different subsets of items (i.e., the most positively and negatively factor-loading items on the first component). Paired *t*-tests were then performed to compare scores on the two subsets of items. If more than 5% of *t*-tests were significant, the SCL-90-R was not considered unidimensional (Christensen et al., 2019). 4) Person Separation Reliability Index (PSI) was performed to evaluate the clinimetric sensitivity of the SCL-90-R (Carrozzino et al., 2021).

## Results

### Fit to the Rasch Model

The initial analysis of the SCL-90-R revealed a significant item-trait interaction statistic ( $\chi^2 = 27126.73$ , degrees of freedom [df] = 810,  $p < 0.001$ ), indicating misfit to the Rasch model (Table 1, Analysis 1). Standardized fit residuals for items ( $SD = 3.43$ ) were not within acceptable limits. Standardized fit residuals for persons ( $SD = 1.01$ ) were found to be within acceptable limits. Rescoring all items, ordered response categories were achieved for 89 of 90 items of the SCL-90-R (i.e., responses to item no. 16 remained disordered) but without significantly improving the overall fit to the Rasch model (Table 1, Analysis 2). Even after adjusting the sample size (Table 1, Analysis 3), fit to the model was not achieved ( $\chi^2 = 1060.37$ ,  $df = 810$ ,  $p < 0.001$ ). Model fit was achieved after the exclusion of misfitting items (Table 1, Analysis 5-8). Model fit statistics for the SCL-90-R subscales are reported in Table 2. The initial analysis of the SCL-90-R somatization subscale showed a significant item-trait interaction statistic ( $\chi^2 = 158.40$ ,  $df = 96$ ,  $p < 0.001$ ), suggesting misfit to the Rasch model (Table 2). The fit to the Rasch model was achieved ( $\chi^2 = 107.69$ ,  $df = 88$ ,  $p = 0.08$ ) after the exclusion of the misfitting symptom (i.e., item no. 1). Standardized fit residuals for items ( $SD = 1.46$ ) and persons ( $SD = 1.51$ ) were found to be within acceptable limits. The analysis of the SCL-90-R hostility subscale revealed a significant item-trait interaction statistic ( $\chi^2 = 96.72$ ,  $df = 24$ ,  $p < 0.001$ ), suggesting misfit to the Rasch model (Table 2). The initial analysis of the SCL-90-R interpersonal sensitivity subscale showed a significant item-trait interaction statistic ( $\chi^2 = 221.69$ ,  $df = 63$ ,  $p < 0.001$ ), indicating misfit to the Rasch model (Table 2). Even after the exclusion of the misfitting symptom (i.e., item no. 6), fit to the Rasch model was not achieved ( $\chi^2 = 80.34$ ,  $df = 56$ ,  $p = 0.02$ ). Rasch analysis of the SCL-90-R subscale covering the items of the Major Depression Inventory (MDI) showed a non-significant item-trait interaction statistic ( $\chi^2 = 92.40$ ,  $df = 80$ ,  $p = 0.16$ ), indicating adequate fit to the model, with no misfitting items. Standardized fit residuals for items ( $SD = 1.73$ ) and persons ( $SD = 1.56$ ) were found to be within acceptable limits. Rasch analysis of the SCL-90-R subscale covering the items of the six-item version of the Hamilton Rating Scale for Depression (HAM-D<sub>6</sub>) revealed a non-significant item-trait interaction statistic ( $\chi^2 = 46.37$ ,  $df = 36$ ,  $p = 0.12$ ), indicating adequate fit to the model. Standardized fit residuals for items ( $SD = 1.77$ ) and persons ( $SD = 1.67$ ) were found to be within acceptable limits. Rasch analysis of the SCL-90-R subscale covering the items of the 8-item version of the Anxiety Symptom Scale (ASS<sub>8</sub>) showed a significant item-trait

interaction statistic ( $\chi^2 = 135.54$ ,  $df = 48$ ,  $p < 0.001$ ), indicating misfit to the Rasch model (Table 2). The analysis of the SCL-90-R subscale covering symptoms of attention deficit hyperactivity disorder (ADHD) revealed a significant item-trait interaction statistic ( $\chi^2 = 59.14$ ,  $df = 30$ ,  $p = 0.001$ ), suggesting misfit to the Rasch model (Table 2).

### **Dimensionality**

Testing for dimensionality revealed significant  $t$ -tests outside the critical value of 5%, suggesting that the total score of the SCL-90-R was multidimensional (Table 1, Analysis 1-8). As to the SCL-90-R somatization subscale, even after the exclusion of the misfitting symptom (i.e., item no. 1), less than 5% of  $t$ -tests were significant, indicating that this subscale was unidimensional (Table 2). Concerning the hostility subscale, less than 5% of  $t$ -tests were significant, suggesting that this measure was unidimensional (Table 2). As to the SCL-90-R interpersonal sensitivity subscale, even after the exclusion of the misfitting symptom (i.e., item no. 6), less than 5% of  $t$ -tests were significant, indicating that this subscale was unidimensional. Regarding the SCL-90-R subscale covering the items of the MDI, less than 5% of  $t$ -tests were significant, indicating that this measure was unidimensional (Table 2). As to the SCL-90-R subscale corresponding to items of the HAM-D<sub>6</sub>, less than 5% of  $t$ -tests were significant, suggesting that this measure was unidimensional (Table 2). Concerning the SCL-90-R subscale covering the items of the ASS<sub>8</sub>, less than 5% of  $t$ -tests were significant, indicating that this subscale was unidimensional. As to the SCL-90-R subscale reflecting symptoms of ADHD, less than 5% of  $t$ -tests were significant, suggesting that this measure was unidimensional (Table 2).

### **PSI**

PSI was 0.94 (Table 1, Analysis 1) indicating that the total score of the SCL-90-R could reliably discriminate between individuals displaying different levels of the underlying trait under examination. PSI of the SCL-90-R somatization subscale was 0.71 (Table 2), indicating that this measure could reliably discriminate between different groups but not between different individuals. PSI indices of the SCL-90-R hostility, interpersonal sensitivity, depression (MDI), depression (HAM-D<sub>6</sub>), anxiety (ASS<sub>8</sub>), and ADHD subscales were found to range from 0.44 to 0.69 (Table 2), suggesting that these measures could not be

reliably used to discriminate between groups of participants with different levels of the underlying construct.

### **Discussion**

The findings of the present study indicate that the SCL-90-R is a comprehensive measure of psychological distress. This is in line with previous studies showing that the total score of the SCL-90-R was found to be multidimensional (Carrozzino et al., 2018; Olsen et al., 2004). This implies that caution should be paid when using the SCL-90-R as an outcome measure in clinical trials since its total score was found to cover more than one dimensions of psychological distress. It should be, however, pointed out that, after the exclusion of misfitting items, the SCL-90-R was found to fit the Rasch model expectations. It is important also to note that excellent PSI indices were found, indicating that the total score of the SCL-90-R is a highly sensitive clinimetric index discriminating between individuals with different levels of psychological distress. This is in accordance with previous studies (Carrozzino et al., 2019; Olsen et al., 2006; Rugulies et al., 2010), which suggested using the SCL-90-R as a screening measure not only to differentiate healthy stress reactions from symptoms of psychological distress but also to identify subjects at risk for psychiatric complications. The clinical differentiation between psychological distress and psychiatric disorders, as well as the distinction between healthy stress and distress reactions that can result in maladaptive functioning of the individual have been a longstanding controversial issue in psychiatry and clinical psychology (Horwitz, 2007; Mulder, 2008; Wheaton, 2007). In an editorial published in one of the most influential journals of psychiatry, Michael R. Phillips (2009) noted that neither the DSM-IV nor the ICD-10 provided criteria for determining when psychological distress becomes clinically significant, making the distinction between normal and maladaptive distress quite difficult. Our findings suggest that the total score of the SCL-90-R can be used to support clinicians and investigators in the clinical process of discrimination between eustress and distress.

In the same editorial, Michael R. Phillips (2009) also noted that psychiatric diagnostic systems did not assess the degree of psychological distress, suggesting that a method for rating its severity should be developed. Findings of the present study indicate that the clinical subscales of the SCL-90-R entailed the clinimetric property of construct validity or dimensionality as each item provided unique/distinctive

clinical information and belonged to an underlying dimension of psychological distress. Such subscales that can be thus used as dimensional measures for assessing the degree of specific manifestations of psychological distress were the SCL-90-R indices of somatization, hostility, and interpersonal sensitivity, as well as those subscales covering the items of the MDI, HAM-D<sub>6</sub>, ASS<sub>8</sub>, and ADHD. As to the somatization subscale, findings are in line with those reported in previous studies (Carrozzino et al., 2017; Carrozzino et al., 2018; Carrozzino et al., 2019) and suggest that this is a valid measure of the tendency to experience and communicate somatic symptoms in response to life events and internal or external situations that are personally stressful to the individual. This SCL-90-R subscale, therefore, reflected the concept of somatic distress or somatization that has been originally introduced by Lipowski (1987, 1988). As to the SCL-90-R hostility subscale, findings indicate that this is a valid measure of the individual tendency to react with anger in response to psychological distress. Such a subscale may cover the concept of irritability that has been introduced by Slater and Roth (1969) who defined it as a tendency to anger, a mode of response to psychological stimuli of a particular kind, such as those in which the individual is threatened in some way or is frustrated in a purposive course of action. This means that the SCL-90-R hostility subscale can help clinicians and investigators to differentiate healthy anger expression from manifestations of irritability that deserve clinical attention. As to the SCL-90-R interpersonal sensitivity subscale, findings suggest that this is a valid measure of the individual tendency towards feeling inferior, inadequate, uncomfortable, and critical during interpersonal interactions (Bech, 2016, 2018). Gillespie et al. (2001) found a significant relationship between traits of interpersonal sensitivity and the Eysenck's personality dimension of neuroticism. Similarly, Bech et al. (2014) noted that the SCL-90-R interpersonal sensitivity subscale overlaps with the Eysenck's concept of neuroticism. Important sources of information may therefore derive from the use of the SCL-90-R interpersonal sensitivity subscale in psychotherapy trials for patients with personality disorders. As to the SCL-90-R subscale corresponding to items of the MDI, findings indicate that this is a valid measure of the tendency to experience and communicate depressive symptoms in response to life events and situations that are personally stressful to the individual. Similar findings were observed for the SCL-90-R subscale corresponding to the items of the HAM-D<sub>6</sub> (Carrozzino et al., 2020). This subscale was found to be a valid measure of the tendency of

some individuals to experience psychological distress in the form of core symptoms of major depression. As to the SCL-90-R subscale corresponding to the items of the ASS<sub>8</sub> (Bech et al., 2014), our findings indicate that this is a valid measure of the tendency of some individuals to experience and manifest psychological distress in the form of anxiety symptoms. Concerning the SCL-90-R ADHD subscale, our findings are in line with those reported in previous studies (Abbass et al., 2021; Eich et al., 2012) and suggest that this is a valid measure of the tendency of some adults to experience and manifest psychological distress in the form of ADHD symptoms.

### **Limitations**

The present study has some limitations. First, this is a general population study, thus limiting the generalizability of findings. Second, a cross-sectional design was used, precluding the evaluation of predictive and incremental validity of the SCL-90-R. Third, only a self-reported measure was used. Future studies, making use not only of other PROMs but also of clinician-rated scales, are needed, particularly to evaluate the concurrent and clinical validity of the SCL-90-R.

### **Conclusions**

In recent years, there has been a reappraisal of the major clinical implications related to the process of assessment of psychological distress (e.g., the number of studies exceeds 4,864 on Web of Science, accessed on March 29, 2022), yet a consensus on the definition and evaluation of this construct has not been reached (Burnette et al., 2020; Grund et al., 2022; Kusi-Appiah et al., 2021). The clinimetric approach (Fava, 2022) and its CLIPROM criteria (Carrozzino et al., 2021) may provide an innovative methodological framework for a substantial revision of clinical conceptualization and assessment of psychological distress. In our clinimetric analysis, the SCL-90-R was found to reflect a broad concept of psychological distress, which embraces the varying ways of responding with a subjective state of emotional discomfort to life events and internal or external situations perceived as uncontrollable, threatening, or unpleasant. It should be noted, however, that the SCL-90-R total score and its clinical subscales displayed different clinimetric properties. The total score is particularly suitable in the initial process of assessment and can be used as a first-line screening measure to discriminate between individuals with different levels of psychological distress, to differentiate healthy stress reactions from

symptoms of psychological distress, and to identify those at risk of psychiatric complications. The total score as an overall indicator of psychological distress should be supplemented by the use of clinical subscales to perform a detailed analysis of specific symptoms of psychological distress. More specifically, the SCL-90-R clinical subscales can be used as dimensional measures to evaluate the severity of a wide spectrum of symptomatic manifestations of psychological distress.

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## PSYCHOLOGICAL DISTRESS AND CLINIMETRICS

**Table 1***Model fit statistics for SCL-90-R items (n = 1000)*

Action	Analysis	Model fit (overall)	Item fit residual, mean (SD)	Person fit residual, mean (SD)	PSI	Dimensionality, significant <i>t</i> -tests (%)
Original sample	1	$\chi^2(810) = 27126.73, p < 0.001$	-0.57 (3.43)	-1.83 (1.01)	0.94	27.58
Rescoring all items (01112)	2	$\chi^2(810) = 2078.33, p < 0.001$	-0.73 (2.56)	-2.96 (1.35)	0.94	24.44
Adjusted sample, n = 500	3	$\chi^2(810) = 1060.37, p < 0.001$	-0.73 (2.56)	-2.96 (1.35)	0.94	24.44
Delete item 64	4	$\chi^2(801) = 923.24, p = 0.002$	-0.70 (2.34)	-3.00 (1.38)	0.94	24.04
Delete item 1	4	$\chi^2(792) = 867.61, p = 0.03$	-0.70 (2.24)	-3.03 (1.39)	0.94	21.52
Delete item 6	5	$\chi^2(783) = 821.03, p = 0.17$	-0.66 (2.14)	-3.06 (1.41)	0.94	21.72
Delete item 27	6	$\chi^2(774) = 766.38, p = 0.57$	-0.66 (2.06)	-3.09 (1.43)	0.94	21.52
Delete item 60	7	$\chi^2(765) = 726.94, p = 0.83$	-0.63 (1.96)	-3.11 (1.45)	0.94	20.30
Delete item 42	8	$\chi^2(756) = 670.71, p = 0.99$	-0.61 (1.92)	-3.15 (1.47)	0.94	19.80

*Note.*  $\chi^2$ : chi-square; p: probability; SD: standard deviation; PSI: person separation index (with extremes)

## PSYCHOLOGICAL DISTRESS AND CLINIMETRICS

**Table 2***Model fit statistics for the SCL-90-R clinical subscales (n = 500)*

SCL-90-R subscales	K	Model fit (overall)	Item fit residual, mean (SD)	Person fit residual, mean (SD)	PSI	Dimensionality, significant <i>t</i> -tests (%)
Somatization	12	$\chi^2(96) = 158.40, p < 0.001$	-0.58 (2.60)	-2.82 (1.43)	0.71	3.64
- Item 1	11	$\chi^2(88) = 107.69, p = 0.08$	-0.45 (1.46)	-2.9 (1.51)	0.69	2.63
Hostility	6	$\chi^2(24) = 96.72, p < 0.001$	-2.14 (1.67)	-3.39 (1.67)	0.44	1.41
Interpersonal sensitivity	9	$\chi^2(63) = 221.69, p < 0.001$	-2.06 (3.01)	-2.95 (1.52)	0.63	3.03
- Item 6	8	$\chi^2(56) = 80.34, p = 0.02$	-0.39 (1.74)	-3.10 (1.52)	0.55	2.12
Depression, MDI	10	$\chi^2(80) = 92.40, p = 0.16$	-0.66 (1.73)	-3.09 (1.56)	0.69	1.92
Depression, HAM-D6	6	$\chi^2(36) = 46.37, p = 0.12$	-0.55 (1.77)	-2.28 (1.67)	0.61	2.53
Anxiety (ASS8)	8	$\chi^2(48) = 135.54, p < 0.001$	-1.69 (2.07)	-3.09 (1.62)	0.62	3.33
ADHD	6	$\chi^2(30) = 59.14, p = 0.001$	-0.46 (1.15)	-2.80 (1.61)	0.55	1.92

*Note.* K: number of items;  $\chi^2$ : chi-square; p: probability; SD: standard deviation; PSI: person separation index (with extremes)