Six and Ten Item Indices of Psychological Distress

Based on the Symptom Checklist-90

Craig S. Rosen, Ph.D.*, Kent D. Drescher, Ph.D.[#], Rudolf H. Moos, Ph.D.*, John W. Finney, Ph.D.*, Ronald T. Murphy, Ph.D. [#], and Fred Gusman, MSW[#].

*Center for Health Care Evaluation, VA Palo Alto Health Care System & Stanford University
   Medical School.

[#] National Center for PTSD, VA Palo Alto Health Care System.

Correspondence regarding this article should be addressed to Craig S. Rosen, Center for Health Care Evaluation, VA Palo Alto Health Care System, Menlo Park Division (152), 795 Willow Road Menlo Park CA, 94025. Telephone: 650-493-5000 X 22846. Fax: 650-617-2736. E-mail: crosen@stanford.edu.

Abstract

Clinicians, provider organizations, and researchers need simple and valid measures to monitor mental health treatment outcomes. This paper describes development of six- and ten-item indices of psychological distress based on the Symptom Checklist-90 (SCL-90). A review of eight factor-analytic studies identified SCL-90 items most indicative of overall distress. Convergent validity of two new indices and the previously developed SCL-10 were compared in an archival sample of PTSD patients (n = 323). One index, the SCL-6, was further validated with archival data on substance abuse patients (n = 3,014 and n = 316) and hospital staff (n = 542). The three brief scales had similar convergent validity, correlating .87 to .97 with the SCL-90 and Brief Symptom Inventory, .49 to .76 with other symptom scales, and .46 to .73 with changes in other symptom measures over time. These results indicate the concise, easily administered scales are valid indicators of psychological distress.

Six and Ten Item Indices of Psychological Distress

Based on the Symptom Checklist-90

As mental health clinicians and provider organizations face increasing demands to routinely monitor treatment effectiveness, they need simple and valid indicators of treatment outcome. Brief measures of psychological distress are also useful in health services and epidemiological studies that need to minimize respondent burden. Existing concise symptom measures, such as the Beck Depression Inventory (Beck et al., 1996), tend to be disorder-specific, limiting their utility in clinical settings that serve patients with a variety of diagnoses. There are brief measures of functioning intended for use with heterogeneous populations, such as the SF-12 (Ware, Kosinski, & Keller, 1996). However, functioning often remits more slowly than distress and is strongly influenced by life context factors outside of treatment (Howard et al., 1993). Thus, there remains a need for brief measures of psychological distress that can be used with heterogeneous clinical populations.

The Symptom Checklist 90 (SCL-90: Derogatis, Lipman & Covi, 1973) and its offspring, the Symptom Checklist 90-Revised (SCL-90-R; Derogatis, 1983) and Brief Symptom Inventory (BSI: Derogatis & Melisaratos, 1983), are well-validated measures of general psychological distress. However, the length of these measures makes them impractical for routine use in many applied settings. This paper describes the development and validation of six-item and 10-item indices based on the SCL-90 that provide data on distress that is comparable to the SCL-90 General Severity Index (GSI), or overall average score.

Several studies have concluded that the SCL-90, SCL-90-R, and BSI, although originally intended to profile nine symptom domains, are best used as unidimensional measures of overall

psychological distress (Cyr, McKenna-Foley, & Peacock, 1985; Piersma, Boes, & Reaume, 1994). Nguyen, Attkisson and Stegner (1983) developed the SCL-10, a concise unidimensional measure, using data from Hoffman and Overall's (1978) factor analysis of the SCL-90. However, data on the SCL-10's validity have not been published. The present study expands on Nguyen et al's (1983) approach by using several factor-analytic studies to inform scale development, and by validating and comparing alternative scales with data from three different populations.

SCL-90 items associated with overall distress. To inform scale development, we reviewed 12 factor analyses of the SCL-90, SCL-90-R, and BSI (Benishek et al., 1998; Bonynge, 1993; Brophy, Norvell, & Kiluk, 1988; Carpenter & Hittner, 1995; Clark & Friedman, 1983; Evanson et al., 1980; Hoffman & Overall, 1978; Piersma et al., 1994; Rauter, Leonard, & Swett, 1996; Schwarzwald, Weisenberg, & Solomon, 1991; Steer, Clark, & Ranieri, 1994; Zack, Toneatto, & Streiner, 1998). These studies included data from psychiatric and substance abuse patients seen in both outpatient and inpatient settings, as well as Israeli soldiers with acute combat stress. In nine studies, the primary factor accounted for 27% to 42% (mean = 35%) of the item variance, five to 11 times the variance explained by any subsequent factor. Three studies were even more unidimensional, with the primary factor accounting for 60% to 71% of the overall variance. The amount of variance explained by the first factor was not systematically related to inpatient versus outpatient setting, or psychiatric versus substance abuse diagnoses.

Although there was a predominant first factor in all the studies, the items loading on this factor varied somewhat across different populations (Schwarzwald et al., 1991). Eight studies specified how items loaded on the primary factor (Benishek et al., 1998; Brophy et al., 1988;

Carpenter & Hittner, 1995; Clark & Friedman, 1983; Evanson et al., 1990; Schwarzwald et al., 1991; Steer et al., 1994; Zack et al., 1998). To identify items that would be signal indicators of distress across a variety of patient populations, we determined which items most consistently loaded highly on the primary factor across these eight studies.

Fifteen items common to both the SCL-90 and BSI loaded on the primary factor in at least six of eight studies. Six of these were items from the original SCL-90 and BSI depression subscales: suicidal ideation, loneliness, feeling blue, lack of interest, hopelessness, and feeling worthless. The other nine items were feeling tense, feeling fearful (anxiety subscale), feeling lonely/alone with others, feeling something is wrong with one's mind (psychoticism subscale), feelings easily hurt, feeling inferior (interpersonal sensitivity); feeling blocked doing things, difficulty making decisions (OCD subscale), and guilt (additional item). It appears that psychoticism subscale items associated with overall distress reflect alienation and cognitive difficulty rather than psychosis per se.

Notably, no item from the somatization, phobic avoidance, hostility or paranoid ideation subscales consistently loaded on the primary factor. These domains often emerged as secondary factors in studies that produced a multiple-factor solution. In sum, the literature suggests the SCL-90 and BSI have a strong unidimensional component, yet in some samples, somatization, avoidance, hostility and paranoia are somewhat independent of the general factor.

The next section discusses development of two brief alternative scales and their validation among PTSD patients. Later sections further assess the validity of a six-item scale (SCL-6) among substance abuse patients and validity of both six-item and 10-item scales among VA hospital staff following the 1989 Loma Prieta earthquake.

Scale Development and Initial Validation

Method

Scale Construction. We constructed two indices of psychological distress based on items common to both the SCL-90 and BSI. The first index, the Symptom Checklist 6 (SCL-6), represented the primary distress factor. Two items each from the SCL-90 depression, anxiety, and psychoticism sub-scales were selected based on 1) the number of studies (at least six of eight) in which they loaded on the primary factor, and 2) their average factor loading on the primary factor (see Table 1).

The second index, the Symptom Checklist 10-Revised (SCL-10R), used items from all nine of the original SCL-90 subscales to more broadly represent both primary and secondary factors of the SCL-90. This index is similar to the SCL-10 of Nguyen et al. (1983) which has six items representing the primary factor and four items tapping somatization and phobic avoidance. For our SCL-10R, six primary factor items were chosen based on two criteria: 1) items loaded on the primary factor in at least six of eight studies with a high average loading, and, 2) they represented as many of the original SCL-90 subscales as possible (see Table 1). Four additional items were included to tap secondary factors of somatization, phobic avoidance, hostility, and paranoia. These were selected based on two criteria: 1) each item loaded on the secondary factor in at least five of six studies, and 2) the item came from the original corresponding SCL-90 subscale (see Table 1). Items and factor loadings for the SCL-10 developed by Nguyen et al. (1983) are also shown in Table 1.

Validation Procedure. The two new SCL-90 subscales and the previously developed SCL-10 (Nguyen et al., 1983) were validated initially with data from patients treated in a residential rehabilitation program at the National Center for Posttraumatic Stress Disorder at the

VA Palo Alto Health Care System between October, 1992, and March, 1998. The sample included 323 veterans (236 males and 87 females) at intake, with discharge data available for 169 patients. Patients with posttraumatic stress disorder (PTSD) are a good population for testing a measure of overall psychiatric distress, because DSM-IV criteria for PTSD span eight of the nine SCL-90 subscales (APA, 1994; Derogatis et al., 1973). PTSD symptoms include physiological reactivity, cognitive intrusions, interpersonal sensitivity, anxiety, phobic avoidance of trauma cues, anger outbursts, paranoid ideation, and estrangement from others. Depressive symptoms, assessed by the remaining SCL-90 subscale, are commonly comorbid with PTSD (Deering et al., 1996).

The male veterans in this sample averaged 48.3 years of age (SD = 4.8) and all had experienced combat trauma, mostly in Vietnam. Sixty percent of the men were White, 18% were African-American, 15% were Hispanic, 2% were Native American, 1% were Asian American, and 4% were from other groups. One-third (33%) of the men were married or living with a partner, 18% were separated, 40% divorced, and 9% never married. The female veterans averaged 41.3 years of age (SD = 8.4). They experienced either sexual trauma (58%), war-zone trauma (27%), both sexual and war-zone trauma (8%) or other traumatic events (6%). The women were predominantly White (79%), with 13% African-American, 2% Hispanic, 2% Asian American and 3% from other groups. One quarter (24%) of the women were married, 6% were separated, 38% were divorced, 1% were widowed, and 31% never married.

Convergent validity was assessed by correlating intake scores on each of the three brief indices with the SCL-90 GSI (overall average score), and with scores on the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), State Anger Inventory, and Mississippi PTSD scale. Sensitivity to change was assessed by correlating change scores on the brief indices with

change scores on the SCL-90 GSI, BDI, BAI, Mississippi PTSD scale, and State Anger inventory. Preliminary analyses suggested correlations between measures were similar among males and females, so the data from both genders were analyzed together.

<div align="center">Results</div>

Internal consistency. Cronbach's alphas for the three brief scales were all better than .80 (see Table 2). Alphas for the 10-item scales were not much higher than for the SCL-6 because their items tapped more diverse domains of distress. Corrected item-total correlations ranged from .49 to .65 on the SCL-6, .46 to .68 on the SCL-10R, and .52 to .67 on the SCL-10 (Nguyen et al., 1983). Mean squared correlations between each item and all the other items on the scale ranged from .30 to .46 on the SCL-6, .24 to .51 on the SCL-10R, and .38 to .60 on the SCL-10. These results indicate all three scales had adequate internal consistency without excessive item redundancy.

Convergent validity. The three short indices correlated .89 to .90 with each other, and .87 to .95 with the SCL-90 GSI (see Table 2). The SCL-90 and the three brief indices all correlated similarly with the BDI and Mississippi PTSD scale. The BAI correlated somewhat more strongly with the SCL-10R and SCL-10 than the SCL-6, probably because the latter did not include items on somatization and phobic avoidance. The SCL-10R, which included two items on hostility and paranoia, correlated slightly more strongly with the state anger inventory than did the SCL-6 or SCL-10. Pre-post changes scores on the three brief indices and SCL-90 all correlated similarly with change scores on the BDI, Mississippi, BAI, and State Anger scales. These findings indicate convergent validity and sensitivity to change of the three brief scales were comparable to those of the SCL-90 GSI score.

Because depressive symptoms load highly on the primary SCL-90 factor, post-hoc analyses considered whether the SCL-6 measured global distress or only depression. With BDI scores partialed out, the SCL-6 correlated significantly at intake and discharge with the SCL-90 GSI (r = .75 and .73), BAI (r = .39 and .41), Mississippi PTSD scale (r = .25 and .33) and state anger inventory (r = .25 and .19). These findings suggest the SCL-6 reflects overall psychiatric distress, not purely depression.

Further Validation of the SCL-6 and SCL-10R

Validation of the SCL-6 with Substance Abuse Patients.

Method

Given equivalent convergent validity for the SCL-6 and SCL-10R in the PTSD sample, the SCL-6 was selected for further validation because it was brief and was comparable with data from a multi-site evaluation of VA substance abuse patients (Moos et al., 1999; Ouimette et al., 1997). We first examined how the SCL-6 correlated with a 22-item version of the BSI used in the multi-site evaluation that included items from the BSI depression, anxiety, psychoticism and paranoia subscales. The multi-site sample included 3,698 male VA substance abuse patients at intake and 3,014 patients at one-year follow-up.

We also assessed the convergent validity of the SCL-6 with the psychiatric composite of the Addiction Severity Index (ASI; McLellan et al., 1992), a measure of psychiatric problems that is commonly used with VA substance abuse patients. In all, 316 patients at the VA Palo Alto Health Care System who had substance abuse diagnoses completed both ASI interviews and a self-report questionnaire containing the multi-site evaluation version of the BSI and items used to calculate ASI composite scores (Rosen, Henson, Finney, & Moos, in press). Intake and six-

month change scores (n = 200) on the SCL-6 were correlated with the multi-site BSI, self-report-based ASI psychiatric composite scores, and interview-based ASI psychiatric composite scores (intake only). Patients in this sample were 99% male, with an average age of 47 (SD = 8.4) and 13.3 (SD = 1.8) years of education. Half (57%) were White, 25% were African-American, 9% were Latino, 2% were Native American, and 7% were from other groups. Fourteen percent were married, 15% separated, 45% divorced, 3% widowed, and 22% single.

Results

Multi-site evaluation sample. Cronbach's alpha for the SCL-6 was .89 at intake and .92 follow-up. Corrected item-total correlations at intake ranged from .67 to .75, and item multiple squared correlations ranged from .46 to .57. The SCL-6 and the 22-item multi-site BSI scale correlated .95 at intake and .94 for one-year change scores.

Comparison of the SCL-6 with the ASI Psychiatric Composite Score. For the Palo Alto VA sample, Cronbach's alpha for the SCL-6 was over .90. Corrected item-total correlations at intake ranged from .68 to .78, and item multiple squared correlations ranged from .49 to .65. The SCL-6 and the 22-item multi-site BSI scale correlated similarly with intake and six-month change scores on the self-administered ASI psychiatric composite (see Table 3). Convergent validity of the SCL-6 with the ASI interview psychiatric composite score was comparable to previously reported correlations of .47 and .66 between the SCL-90 and ASI psychiatric composite (McLellan et al, 1985; Zanis et al., 1994).

Validation of the SCL-6 and SCL-10R with Hospital Staff

Although the brief subscales showed good convergent validity among veterans with PTSD or substance use problems, it is possible that they might be valid only for highly

symptomatic patients. We therefore evaluated the validity of the SCL-6 and SCL-10R in a less symptomatic population, a sample of VA hospital staff assessed following the 1989 Loma Prieta earthquake. Nguyen et al.'s SCL-10 was not evaluated because not all its items are on the BSI.

Method. Following the 1989 earthquake, psychiatric symptom questionnaires were distributed to all staff at the Palo Alto VA Medical Center (roughly 3,000 people). A total of 542 staff members (25% male, 75% female) returned questionnaires which included responses to the BSI and civilian Mississippi PTSD scale regarding the month following the quake. Correlations with the BSI and Mississippi scale assessed convergent validity of the SCL-6.

Respondents' mean age was 42.1 (S.D. 10.9) years. Most (76%) were Caucasian, and the rest were African-American (9%), Filipino (7%), Asian American (5%), or Hispanic (4%). Relatively few staff members were exposed to earthquake-related trauma: 4% sustained an injury, 1% saw someone else injured, and less than 10% had to leave their homes.

Results. The mean BSI score in this sample was 0.40 (SD = .51), consistent with non-patient norms. However 22% of men and 24% of the women had BSI T-scores over 60, compared with 16% expected in a normal population. Mean scores on the brief scales were 0.42 (SD = .56) on the SCL-10R and 0.56 (SD = .72) on the SCL-6. Cronbach's alpha was .88 for both brief scales. Corrected item-total correlations ranged from .34 to .72 on the SCL-10R and from .60 to .78 on the SCL-6. Item multiple squared correlations ranged from .17 to .61 on the SCL-10R and from .39 to .65 on the SCL-6. SCL-10R items with the lowest multiple square correlations with the other items were fear of open spaces (MSC = .17) and trouble getting breath (MSC = .23).

Correlations with the full BSI were high for both the SCL-10R (r = .97) and SCL-6 (r = .93). Convergent validity with the civilian version of the Mississippi PTSD scale was comparable for the BSI (r = .79), SCL-10R (r = .76) and SCL-6 (r = .73).

Discussion

These findings indicate that a six-item or 10-item measure can provide data on overall psychiatric distress comparable to average scores on the SCL-90 or BSI. The SCL-10 (Nguyen et al., 1983), SCL-10R, and SCL-6 correlated highly with the SCL-90, BSI, and a 22-item version of the BSI used in a multi-site evaluation of VA substance abuse treatment outcomes (Moos et al., 1999; Ouimette et al., 1997). Among PTSD patients, substance abuse patients, and hospital staff, the convergent validity of these brief scales with other symptom measures was comparable to the convergent validity of the SCL-90, BSI, or 22-item BSI with those measures. Mean changes over time were small in the chronic patient populations studied here, and many patients regressed. Nonetheless, change scores on the brief scales were highly correlated with changes on other symptom measures.

Validity coefficients were generally equivalent among the three brief scales we tested. The SCL-6 has the benefit of brevity, whereas the longer scales include items assessing more symptom domains. Two factors may explain why convergent validity of the 10-item SCL-10R and SCL-10 was not markedly superior to the SCL-6. First, although the 10-item scales include items from symptom domains that are distinct from overall distress, these domains account for a small proportion of the variance among SCL-90 items. Second, representing each symptom domain with only one or two items may have provided inadequate construct coverage to

substantially improve assessment of distress. One advantage of the SCL-6 and SCL-10R over the SCL-10 is that they are comparable with existing BSI data sets, as well as with SCL-90 data.

The present study has two limitations. First, participants responded to the subscale items within the context of the larger parent measures (SCL-90 or BSI). Future research needs to assess the validity of responses to the six-item or ten-item scales as stand-alone measures. Second, the validation samples were drawn from VA settings. Although these measures proved valid with both highly symptomatic VA patients and generally non-symptomatic VA staff, more research is needed to confirm their validity with non-veterans experiencing moderate psychological distress.

These brief scales were designed to be tools for monitoring changes in patients' distress and for comparing levels of distress in different patient populations. Although a brief measure of distress might be useful in identifying patients in need of mental health treatment, these scales were not developed for screening purposes. Further assessment of the scales' sensitivity and specificity would be needed before using them as screening instruments. The scales are also not intended to be used for diagnosis, as they intentionally assess symptoms common across many types of psychiatric and substance abuse patients.

In sum, these six-item and 10-item scales provide data on psychological distress that is comparable to overall scores on the well-validated and much lengthier SCL-90 and BSI. These concise measures can be easily administered in non-research settings to monitor patient progress, evaluate program effectiveness, or compare distress in different patient populations. These scales are intended to be general measures of psychological distress, and should be supplemented with symptom-specific measures when evaluating treatments that target somatization, phobic avoidance, hostility, paranoid ideation, or psychotic symptoms.

References

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders, (4th ed.) Washington, D.C.: Author.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Manual for the Beck Depression Inventory-II. New York: Psychological Corporation.

**Benishek, L. A., Hayes, C. M., Bieschke, K. J., & Stoffelmayr, B. E. (1998). Exploratory and confirmatory factor analyses of the Brief Symptom Inventory among substance abusers. Journal of Substance Abuse, 10, 103-144.

*Bonynge, E. R. (1993). Unidimensionality of SCL-90-R scales in adult and adolescent and crisis samples. Journal of Clinical Psychology, 49, 212-215.

**Brophy, C. J., Norvell, N. K., & Kiluk, D. J. (1988). An examination of the factor structure and convergent discriminant validity of the SCL-90R in an outpatient clinic population. Journal of Personality Assessment, 52, 334-340.

**Carpenter, K. M., & Hittner, J. B. (1995). Dimensional characteristics of the SCL-90-R: Evaluation of gender differences in dually diagnosed inpatients. Journal of Clinical Psychology, 51, 383-390.

**Clark, A., & Friedman, M. J. (1983). Factor structure and discriminant validity of the SCL-90 in a veteran psychiatric population. Journal of Personality Assessment, 47, 396-404.

Cyr, J. J., McKenna-Foley, J. M., & Peacock, E. (1985). Factor structure of the SCL-90-R: Is there one? Journal of Personality Assessment, 49, 571-578.

---

* Study included in analysis of SCL-90/SCL-90-R/BSI factor structure. ** Study included in analysis of SCL-90/SCL-90-R/BSI factor structure and selection of highest-loading items.

Deering, C. G., Glover, S. G., Ready, D., Eddleman, H. C., & Alarcon, R. D. (1996). Unique patterns of comorbidity in posttraumatic stress disorder from different sources of trauma. Comprehensive Psychiatry, 37, 336-346.

Derogatis, L. R. (1983). SCL-90-R administration, scoring, and procedures manual II. Towson, MD: Clinical Psychometric Research.

Derogatis, L. R., Lipman, R. S., & Covi, L. (1973). The SCL-90: An outpatient psychiatric rating scale – Preliminary report. Psychopharmacology Bulletin, 9, 13-28.

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. Psychological Medicine, 13, 595-605.

**Evanson, R.C., Holland, R. A., Mehta, S., and Yasin, F. (1980). Factor analysis of the Symptom Checklist-90. Psychological Reports, 46, 695-699.

*Hoffman, N. G., & Overall, P. B. (1978). Factor structure of the SCL-90 in a psychiatric population. Journal of Consulting and Clinical Psychology, 46, 1187-1191.

Howard, K. I., Lueger, R. J., Maling, M. S., & Martinovich, Z. (1993). A phase model of psychotherapy outcome: Causal mediation of change. Journal of Consulting & Clinical Psychology, 61, 678-685.

McLellan, A. T., Kushner, H., Metzger, D., Peters, R., Smith, I., Grissom, G., Pettinati, H., and Argeriou, M. (1992). The 5th edition of the addiction severity index. Journal of Substance Abuse Treatment, 9, 199-213.

McLellan, A. T., Luborsky, L., Cacciola, J., Griffith, J., Evans, F., Barr, H. L., & O'Brien, C. P. (1985). New data from the Addiction Severity Index: Reliability and validity in three centers. Journal of Nervous and Mental Disease, 173, 412-23.

Moos, R. H., Finney, J. W., Ouimette, P. C., & Suchinsky, R. T. (1999). A comparative evaluation of substance abuse treatment: I. Treatment orientation, amount of care, and 1-year outcomes. Alcoholism: Clinical and Experimental Research, 23, 529-536.

Nguyen, T. D., Attkisson, C. C., & Stegner, B. L. (1983). Assessment of patient satisfaction: Development and refinement of a service evaluation questionnaire. Evaluation & Program Planning, 6, 299-314.

Ouimette, P. C., Finney, J. W., & Moos, R. H. (1997). Twelve-step and cognitive-behavioral treatment for substance abuse: A comparison of treatment effectiveness. Journal of Consulting & Clinical Psychology, Apr, 65, 230-240.

*Piersma, H. L., Boes, J. L., & Reaume, W. M. (1994). Unidimensionality of the Brief Symptom Inventory (BSI) in adult and adolescent inpatients. Journal of Personality Assessment, 63, 338-344.

*Rauter, U. K., Leonard, C. E., & Swett, C. P. (1996). SCL-90-R factor structure in an acute, involuntary, adult psychiatric inpatient sample. Journal of Clinical Psychology, 52, 625-629.

Rosen, C. S., Henson, B, Finney, J., & Moos, R. (in press). Consistency of self-report and interview-based ASI composite scores. Addiction.

**Schwarzwald, J., Weisenberg, M., & Solomon, Z. (1991). Factor invariance of the SCL-90-R: The case of combat stress reaction. Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3, 385-390.

**Steer, R. A., Clark, D. A., & Ranieri, W. F. (1994) Symptom dimensions of the SCL-90-R: a test of the tripartite model of anxiety and depression. Journal of Personality Assessment, 62, 525-536.

Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-item short form health survey: Construction of scales and preliminary tests of reliability and validity. Medical Care, 34, 220-233.

**Zack, M., Toneatto, T., & Streiner, D. L. (1998). The SCL-90 factor structure in comorbid substance abusers. Journal of Substance Abuse, 10, 85-101.

Zanis, D. A., McLellan, A.T., Cnaan, R. A., & Randall, M. (1994). Reliability and validity of the Addiction Severity Index with a homeless sample. Journal of Substance Abuse Treatment, 11, 541-8.

Acknowledgements

Table 1

SCL-90/BSI Items Included on Brief Scales and Their Factor Loadings in the Literature

Primary Factor Items	Scales Containing Item			Loading on Primary Factor		
Item (SCL-90 Subscale)	SCL-6	SCL-10R	SCL-10	# of Studies[a]	Mean[b]	Range [b]
Hopeless about future (dep)	X	X	--	8/8	0.70	.68 - .75
Feeling blue (dep)	X	X	X	8/8	0.69	.55 - .77
Lonely (dep)	--	--	X	8/8	0.69	.64 - .77
No interest in things (dep)	--	--	X	8/8	0.63	.51 - .70
Feel worthless (dep)	--	--	X	7/8	0.65	.51 - .79
Feel alone with others (psy)	X	--	X	7/8	0.64	.53 - .72
Something wrong with mind (psy)	X	X	--	7/8	0.61	.49 - .70
Feelings easily hurt (int)	--	X	--	7/8	0.57	.46 - .70
Tense or keyed up (anx)	X	X	X	7/8	0.55	.44 - .66
Fearful (anx)	X	--	--	6/8	0.57	.57 - .70
Difficulty with decisions (OC)	--	X	--	6/8	0.57	.48 – .70

Secondary Factors Items				# of Studies in which Item Loaded		
(SCL-90 Subscale)	SCL-6	SCL-10R	SCL-10	> .40 on a Secondary Factor[c]		
Trouble getting breath (som)	--	X	--	5/6		
Feel weak (som)	--	--	X	5/6		
Heaviness in limbs (som)	--	--	X	4/6		
Afraid of open spaces (phob)	--	X	X	5/6		
Afraid to go out alone (phob)	--	--	X	3/6		
Temper outbursts (host)	--	X	--	5/6		
Talked about/watched (par)	--	X	--	6/6		

Note: dep = depression, anx = anxiety, psy = psychoticism, int = interpersonal sensitivity, OC = obsessive-compulsive, som = somatic, phob = phobic avoidance, host = hostility, par = paranoia. [a]Studies in which item loaded > .40 on primary factor. [b]Based on 5 studies that reported exact loadings. [c]Exact loadings (not shown) reported in only 2 studies.

Table 2

Means and Correlations of Distress Indices and Symptom Measures Among PTSD Patients

Measures	Mean	(SD)	SCL-90 GSI	SCL-6[a]	SCL-10R[b]	SCL-10[c]
				Correlations		
Intake Scores (n = 323)						
SCL-90 GSI	1.94	(0.73)	--	.87	.95	.92
SCL-6	2.62	(0.88)	--	(.83)	.90	.89
SCL-10R	2.17	(0.84)	--	--	(.87)	.90
SCL-10 (Nguyen et al., 1983)	2.26	(0.85)	--	--	--	(.88)
BDI	30.6	(10.1)	.70	.68	.68	.67
Mississippi PTSD Scale	134.3	(17.6)	.57	.53	.54	.50
BAI	28.2	(12.6)	.74	.63	.70	.68
State Anger	18.3	(8.0)	.60	.49	.57	.51
Change Scores (n = 169)						
SCL-90 GSI	- 0.16[d]	(0.68)	--	.87	.92	.90
SCL-6	- 0.34	(0.95)	--	--	.88	.89
SCL-10R	- 0.18	(0.84)	--	--	--	.88
SCL-10 (Nguyen et al., 1983)	- 0.24	(0.85)	--	--	--	--
BDI	- 3.52	(11.6)	.72	.73	.71	.68
Mississippi PTSD Scale	- 4.43	(17.2)	.51	.53	.46	.46
BAI	+ 0.74	(12.5)	.69	.66	.66	.64
State Anger	+ 0.37	(9.8)	.57	.54	.54	.49

Note: Cronbach's alpha's for the brief scales are shown on the diagonals in parentheses. [a] 6-item index of primary SCL-90 factor, using items from SCL-90 depression, anxiety, and psychoticism subscales. [b] 10-item index of the SCL-90 primary factor plus somatization, phobic anxiety, hostility, and paranoid ideation, using items from all nine SCL-90 subscales. [c] 10-item index (SCL-90 primary factor plus somatization and phobic anxiety) developed by Nguyen et al (1983). [d] Negative change score indicates reduced symptoms, positive indicates increased symptoms.

Table 3

Means and Correlations of SCL-6 and Other Symptom Measures Among Substance Abuse Patients

Measures	Mean	(SD)	22-Item Multi-Site BSI	SCL-6
Intake (n = 316)				
22-Item Multi-Site BSI	1.75	(0.94)	--	.95
SCL-6	2.04	(1.13)	--	--
Interview ASI Psychiatric				
Composite Score	0.28	(0.25)	.52	.51
Self-Report ASI Psychiatric				
Composite Score	0.35	(0.26)	.74	.71
Pre-Post Change (n = 200)				
22-Item Multi-Site Scale	- 0.19	(0.95)	--	.94
SCL-6	- 0.29	(1.17)	--	--
Self-Report ASI Psychiatric	- 0.03	(0.28)	.68	.69
Composite Score				

Note. Multisite BSI = 22 items from the depression, Anxiety, Paranoia and Psychoticism subscales of the Brief Symptom Inventory.; SCL-6 = 6-item index of primary SCL-90 factor, using highest loading items from the SCL-90/BSI depression, anxiety, and psychoticism subscales; ASI = Addiction Severity Index. Negative change score indicates reduced symptoms.