

This article examines psychometric characteristics of the 100-item Trauma Symptom Inventory (TSI) in a sample of 370 psychiatric inpatients and psychotherapy outpatient men and women. The 10 clinical scales of the TSI had a mean α of .87, with α s ranging from .74 for Tension Reduction Behavior to .90 for both Depression and Intrusive Experiences. A self-reported history of interpersonal trauma (in child- or adulthood) was associated with elevations on all TSI scales relative to those not reporting victimization. Post hoc multiple regression analyses indicated that client age, sex, inpatient versus outpatient status, childhood sexual and physical abuse, and adult sexual assault were unique predictors of various TSI raw scale scores. Sex interacted with other predictors in several instances; women with sexual- or physical-assault histories scored higher on Depression and Intrusive Experiences, and men battered in a relationship scored higher on Sexual Concerns and Dysfunctional Sexual Behavior.

Trauma Symptom Inventory

Psychometrics and Association With Childhood and Adult Victimization in Clinical Samples

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Despite growing awareness among clinicians and researchers that natural catastrophes, interpersonal victimization experiences, combat, and other traumatic events can produce a number of relatively specific psychological symptoms, few standardized instruments have been developed to tap such posttraumatic symptomatology. For example, there is a paucity of fully

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validated and normed clinical inventories that assess the frequency or extent of the various symptoms subsumed under the diagnosis of posttraumatic stress disorder (PTSD) in the current *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association (*DSM-IV*; American Psychiatric Association, 1994). These symptoms include reexperiencing of the traumatic event (e.g., flashbacks, nightmares, intrusive memories), numbing of general responsiveness, avoidance of events or stimuli reminiscent of the trauma, and persistent symptoms of autonomic arousal (e.g., heightened startle response, sleep disturbance, poor concentration). Such symptoms appear to arise from a wide variety of traumatic experiences, including combat, natural disasters, child abuse, and physical or sexual assaults (March, 1993; McNally, 1993).

In addition to the specific symptoms of PTSD, the trauma literature has documented additional sets of symptoms associated with childhood and adult interpersonal victimization (e.g., child sexual abuse, rape, spouse battering) that are rarely assessed by currently available instruments. Although many of these difficulties have been considered evidence of a personality disorder, the connection between these symptoms and both childhood and adult traumatic victimization has led some writers to suggest the need for a broader view of posttraumatic disturbance, that is, one that includes symptoms beyond those of PTSD per se (Herman, 1992; McCann & Pearlman, 1990). Most relevant in this regard are victimization-related anger (e.g., Briere & Runtz, 1987; Hilberman, 1980), dissociation (e.g., Chu & Dill, 1990; Sanders & Giolas, 1991; Spiegel, 1993), sexual problems (e.g., Becker, Skinner, Abel, & Treacy, 1982; Finkelhor, Hotaling, Lewis, & Smith, 1989), interpersonal difficulties (e.g., Ellis, Atkeson, & Calhoun, 1981; Koss & Harvey, 1991; Pollock et al., 1990), disturbance in self functions (e.g., Cole & Putnam, 1992; Elliott, 1994), and tension reduction behaviors such as self-mutilation (Walsh & Rosen, 1988) and compulsive or otherwise dysfunctional sexual activity (Briere & Runtz, 1990).

The relative dearth of standardized trauma- or victimization-specific instruments has resulted in the use of more labor-intensive diagnostic interviews such as the Structured Clinical Interview Schedule for *DSM-III-R* (SCID; Spitzer & Williams, 1986), the development of study- or practice-specific trauma checklists or, more typically, a tendency to underevaluate posttraumatic difficulties through the use of more generic psychological tests (Briere & Runtz, 1993; Elliott, 1994). Recently, however, a small number of trauma-specific measures have been introduced, including the PTSD scales of the Minnesota Multiphasic Personality Inventory-2 (Keane, Malloy, & Fairbanks, 1984; Schlenger & Kulka, 1989), the Symptom Checklist (SCL;

Foy, Sippelle, Rueger, & Carroll, 1984), the Trauma Symptom Checklist (TSC-33/40; Briere & Runtz, 1989; Elliott & Briere, 1992), the PTSD Symptom Scale (Foa, Riggs, Dancu, & Rothbaum, 1993), the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979), and the Symptom Checklist-PTSD Scale (Saunders, Arata, & Kilpatrick, 1990).

Although most of these instruments have been shown to correlate with subjects' self-reports of recent or childhood traumatic events, they tend to consist of a small number of items, to focus on one or two general constructs rather than generating a series of meaningful scale scores, to have minimal standardization data, and to have been developed with reference to a specific group (e.g., war veterans or former sexual abuse victims) rather than to the general population. Further, two of these instruments are intended more as research measures than clinical ones (the IES and the TSC-33/40).

In response to the paucity of standardized, clinically useful measures of posttraumatic symptomatology, Briere (1995) developed the Trauma Symptom Inventory (TSI).¹ A major revision and expansion of the TSC-33/40, the 10 clinical scales² of the TSI evaluate various forms of symptomatology, each of which are relevant to the psychological assessment of traumatized individuals: *Anxious Arousal* (AA), *Depression* (D), *Anger/Irritability* (AI), *Intrusive Experiences* (IE), *Defensive Avoidance* (DA), *Dissociation* (DIS), *Sexual Concerns* (SC), *Dysfunctional Sexual Behavior* (DSB), *Impaired Self-Reference* (ISR), and *Tension Reduction Behavior* (TRB).

The TSI has demonstrated acceptable psychometric properties in nonclinical samples. For example, the average α reliability of the 10 TSI clinical scales in the standardization (general population) sample ($N = 812$), a Navy recruit sample ($N = 3,659$), and a university sample ($N = 279$) was .86, .84, and .84, respectively (Briere, 1995; Smiljanich & Briere, 1993). Analysis of this measure's predictive validity in a subgroup of the standardization sample ($n = 449$) revealed that TSI scales correctly predicted PTSD status—as determined by other measures—in 91% of cases (Briere, 1995).

Not examined in either of the above studies, however, were the psychometric characteristics of the TSI in clinical groups. Such information is quite important for the evaluation of the TSI, because it is in clinical settings that this instrument is most likely to be used and, conversely, histories of interpersonal victimization are seemingly most prevalent among clinical subjects.

The current study, using a variety of clinical samples, was conducted to provide two sets of information: (a) data on the reliability and construct validity of the TSI clinical scales for clinical subjects, with the latter being evaluated in terms of their expected correlations with self-reported traumatic

experience, and (b) data on the specific sequelae of a variety of forms of interpersonal violence, where each type of victimization is evaluated after controlling for demographics as well as other major forms of victimization.

METHOD

Subjects

Because subjects aged 54 or younger had higher TSI scores than those over 54 in the standardization sample (Elliott, 1993b), this article presents data relevant solely to the younger group (97% of all available clinical subjects). The resulting subject pool consisted of 370 individuals: 203 women and 30 men, recruited by 10 therapists (including three of the authors) from their outpatient clinical practices, and 101 females and 36 males from two general psychiatric inpatient units. The outpatient subjects were invited by their therapists to complete the TSI and the Childhood Maltreatment Interview Schedule—Short Form (CMIS-SF; Briere, 1992), a questionnaire inquiring about childhood and adult interpersonal victimization experiences. The inpatient subjects completed the TSI and the CMIS-SF as a part of their regular intake evaluation (Elliott, 1993a; Schmidt, 1994).

Subjects were categorized according to their self-reported history of various interpersonal traumas. They were identified as former sexual abuse victims if they reported actual sexual contact before age 17 that was physically forced or that occurred with someone 5 or more years older, and as former physical abuse victims if they reported parental actions committed before they were 17 years old that were intentional and either (a) resulted in bruises, scratches, broken bones, or broken teeth or (b) involved punching, kicking, or biting. In the adult victimization domain, subjects were asked to report on any sexual or physical assaults that occurred within or outside of a sexual relationship after age 17.

The mean age of subjects in the combined clinical sample (inpatient and outpatient) was 36.1 years ($SD = 9.43$, range = 18–54). Of the total sample, 301 (81.9%) were Caucasian, 40 (10.8%) were Hispanic, 23 (6.2%) were Afro-American/Black, and 4 (1.1%) were Asian. Victimization experiences were relatively common among subjects, with more females than males reporting childhood sexual abuse, adult sexual assault, and battery in an adult relationship (see Table 1). The rate of traumatic experiences did not differ according to whether subjects were inpatients or outpatients.

Statistical Analyses

Analysis of the relationship between TSI scores and victimization experience was conducted in two steps. First, subjects were categorized according to whether they reported any instance of sexual or physical abuse in childhood or any instance of adult sexual assault, battery by a spouse, or nonintimate physical assault. Those who acknowledged any of these events were designated as having an interpersonal victimization history and were compared to those who did not in a 2×2 (Sex \times Victimization History) multivariate analysis of variance (MANOVA).

For any scale that had a significant victimization effect or interaction, a post hoc hierarchical multiple regression equation was calculated. At Step 1, sex, age, clinical status (inpatient versus outpatient), and each of the individual forms of interpersonal violence cited above (e.g., sexual abuse, battery by a spouse) were entered into the regression equation. At Step 2, the interactions of each of these variables with sex (e.g., Sex \times Rape) were added to the equation as a block. If the block of Step 2 interaction variables accounted for significant additional variance in TSI scores (as assessed by its R^2 improvement), the β weights for the individual interaction terms were evaluated for statistical significance.

All analyses reported here involve TSI raw scores as opposed to the T scores (standardized on sex and age) available for this measure. This was done to allow for evaluation of subject sex main effects and interactions—analyses that could not be done using standardized scores.

RESULTS

Scale Data

The mean intercorrelation between TSI scales was .54, with r s ranging from .28 to .79 (see Table 2). Individual TSI scale α reliabilities were as follows: AA = .87, D = .90, AI = .89, IE = .90, DA = .88, DIS = .88, SC = .89, DSB = .89, ISR = .87, and TRB = .74. The mean scale α for all scales was .87.

Association With Broadly Defined Victimization

MANOVA revealed significant main effects of sex, $F(10, 357) = 3.51$, $p < .001$, and self-reported victimization history, $F(10, 357) = 6.73$, $p < .001$,

TABLE 1: Incidence of Interpersonal Violence Experiences According to Sex

<i>Type of Interpersonal Violence</i>	<i>Rate for Males</i>	<i>Rate for Females</i>	<i>X²</i>	<i>p</i>
Childhood physical abuse	22 (30.3)	125 (42.1)	2.65 ^a	<i>ns</i>
Childhood sexual abuse	17 (25.8)	211 (69.6)	42.36	.001
Adult sexual assault	6 (9.1)	117 (39.4)	20.80	.001
Adult battery in relationship	5 (7.6)	88 (29.3)	12.39	.001
Adult physical assault (nonrelationship)	15 (22.7)	40 (13.4)	3.00	<i>ns</i>

NOTE: Numbers in parentheses are percentages.

a. X² values corrected for continuity.

as well as a Sex \times Victimization interaction, $F(10, 357) = 2.24, p < .015$. According to post hoc univariate analyses of variance (ANOVAs), females scored significantly higher than males on AA, D, DIS, IE, and ISR, and those with victimization histories scored higher on all 10 TSI clinical scales. Although there was a multivariate interaction between sex and victimization, no individual univariate interactions were statistically significant. See Table 3 for means, standard deviations, and ANOVA results according to sex and victimization status.

Association With Demographics and Specific Victimization Types

Multiple regression analyses indicated that all TSI scales were predicted by some combination of demographics, clinical status, and specific victimization type. As presented in Table 4, child sexual abuse was uniquely associated with all 10 TSI scales, followed by clinical status (associated with all scales but SC), and childhood physical abuse (associated with all scales but SC and DSB). Also predictive was being female (AA, D, DIS, IE, and ISR), adult sexual assault (all scales but AI and DSB), adult nonrelationship physical assault (AI), and a relatively younger age (AI, DSB, SC, and TRB). Tests of the R^2 improvement associated with the Sex \times Predictor interaction terms were significant for four TSI scales: Female subjects with sexual assault or nonrelationship physical assault histories scored significantly higher on D and IE, whereas males with histories of being assaulted in a relationship scored higher on DSB and SC.

DISCUSSION

This article describes the psychometric characteristics of a new self-report measure of posttraumatic symptoms, the TSI, in a clinical sample of 370 subjects. The scales of the TSI demonstrated reasonable reliability and validity in clinical samples, supporting the utility of the TSI in the detection and measurement of various posttraumatic states.

The 10 scales of the TSI had a mean α of .87. The low standard error associated with this level of reliability has implications for within-subject comparisons (or "profiles") of TSI scale scores. As noted by Anastasi (1988), interpretation of scale differences must take into account the extent to which the standard errors of their respective scores are exceeded by their difference. This and related issues led Carmines and Zeller (1979) and others to suggest minimal α s of .80 or greater for widely used scales—criteria generally exceeded by the TSI in the current study.

Construct validity of the TSI was assessed by examining its association with victimization history, because a putative measure of traumatic impact would be expected to increase for those who had been exposed to interpersonal violence. As predicted, those with child or adult interpersonal victimization experiences scored higher on all scales of the TSI. Although MANOVA indicated that sex interacted with victimization history in this regard, post hoc univariate ANOVAs revealed no significant Sex \times Victimization interaction terms. Inspection of the means for this analysis, however, suggests that the significant multivariate interaction was due to the general tendency for victimized women to score higher than other groups on most TSI scales, and for victimized men to score higher on DSB.

Multiple regression analysis, using demographics and specific types of interpersonal violence histories to predict individual TSI scales, revealed a number of significant associations. First, as was also found for the more generic MANOVA, female subjects scored higher than males on a number of scales. Although it is not uncommon for women to score somewhat higher than men on measures of psychological distress, the specific pattern of sex differences identified here suggests that these generic differences may be more related to dysphoria, posttraumatic stress, and identity, as opposed to anger, sexuality, or acting-out behaviors.

However, it does not necessarily follow from these results that women

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TABLE 2: Correlations Between the Trauma Symptom Inventory (TSI) Scales

TSI Scale ^a	AA	AI	D	DA	DIS	DSB	IE	ISR	SC	TRB
AA	1.00*									
AI	.58	1.00								
D	.74	.55	1.00							
DA	.64	.47	.66	1.00						
DIS	.73	.50	.69	.68	1.00					
DSB	.37	.33	.28	.35	.35	1.00				
IE	.66	.48	.67	.71	.67	.28	1.00			
ISR	.70	.52	.74	.69	.77	.44	.58	1.00		
SC	.51	.42	.45	.48	.49	.58	.48	.57	1.00	
TRB	.52	.60	.54	.50	.56	.79	.51	.58	.54	1.00

a. Trauma Symptom Inventory scales: AA = Anxious Arousal, AI = Anger-Irritability, D = Depression, DA = Defensive Avoidance, DIS = Dissociation, DSB = Dysfunctional Sexual Behavior, IE = Intrusive Experiences, ISR = Impaired Self-Reference, SC = Sexual Concerns, TRB = Tension Reduction Behavior.
 * All $p < .001$.

TABLE 3: Trauma Symptom Inventory (TSI) Scale Scores According to Sex and Victimization History

TSI Scale ^a	No Victimization History				Victimization History				Sex (ANOVA) ^b		Victimization History (ANOVA)	
	Females (n = 43)		Males (n = 29)		Females (n = 261)		Males (n = 37)					
	M	(SD)	M	(SD)	M	(SD)	M	(SD)	F(1, 366)	p	F(1, 366)	p
AA	10.21	(4.87)	7.69	(5.74)	14.56	(5.35)	10.84	(6.51)	14.78	.001	21.33	.001
D	10.00	(6.20)	8.48	(7.46)	15.36	(6.20)	10.76	(6.32)	10.60	.001	16.50	.001
AI	9.81	(6.16)	9.45	(5.90)	15.06	(6.22)	16.32	(5.27)	0.25	<i>ns</i>	44.52	.001
IE	6.02	(5.07)	4.17	(5.07)	12.57	(6.38)	8.16	(5.07)	12.02	.001	34.07	.001
DA	7.93	(5.49)	6.48	(5.90)	13.73	(5.98)	12.00	(5.95)	3.26	<i>ns</i>	41.30	.001
DIS	7.54	(4.03)	6.24	(6.23)	13.58	(6.42)	9.05	(6.50)	9.96	.002	23.10	.001
SC	5.54	(6.24)	4.82	(4.29)	10.57	(2.68)	9.73	(9.15)	0.54	<i>ns</i>	22.10	.001
DSB	2.81	(4.54)	2.24	(3.17)	4.64	(5.88)	6.30	(7.44)	0.40	<i>ns</i>	11.78	.001
ISR	11.07	(5.71)	8.17	(5.93)	15.07	(6.21)	12.87	(7.19)	7.56	.006	21.94	.001
TRB	3.88	(3.92)	2.83	(2.66)	6.50	(4.64)	7.30	(4.31)	0.04	<i>ns</i>	29.16	.001

a. Trauma Symptom Inventory scales: AA = Anxious Arousal, AI = Anger-Irritability, D = Depression, DA = Defensive Avoidance, DIS = Dissociation, DSB = Dysfunctional Sexual Behavior, IE = Intrusive Experiences, ISR = Impaired Self-Reference, SC = Sexual Concerns, TRB = Tension Reduction Behavior.

b. ANOVA = analysis of variance.

TABLE 4: Multiple Regression of TSI^a Scale Scores as Predicted by Demographics, Clinical Status, and Specific Victimization History

TSI Scale ^b	Step 1										Step 2			Significant Interactions	β
	Age β	Sex β	Off β	CPA ^d β	CSA ^e β	ASLT ^f β	S/A ^g β	Bar ^h β	R ²	F(8, 345)	p	R ² ch ⁱ	F		
AA	.03	.22*	.27*	.13*	.18*	.08	.12*	.07	.24	14.30	.001	.02	1.70	ns	
AI	-.12*	.00	.19*	.21*	.18*	.12*	.08	.06	.20	10.63	.001	.00	0.33	ns	
D	.02	.20*	.41*	.09*	.25*	.02	.17*	.01	.35	23.39	.001	.03	2.84	.02	sex × aslt
															sex × S/A
DA	-.08	.08	.23*	.15*	.29*	.02	.13*	.06	.25	14.41	.001	.02	1.80	ns	
DIS	-.02	.17*	.23*	.14*	.26*	.05	.16*	.03	.28	16.49	.001	.02	2.04	ns	
DSB	-.25*	-.07	.12*	.03	.18*	.01	.09	.09	.14	7.22	.001	.03	2.51	.03	sex × bar
IE	-.03	.16*	.12*	.21*	.29*	.07	.12*	.05	.30	18.36	.001	.03	2.52	.03	sex × aslt
															sex × S/A
ISR	-.07	.15*	.25*	.10*	.19*	.04	.14*	.02	.20	10.63	.001	.01	0.43	ns	
SC	-.16*	-.02	.09	.04	.32*	-.02	.14*	.01	.18	9.36	.001	.03	2.39	.04	sex × bar
TRB	-.23*	.00	.24*	.19*	.21*	.08	.11*	.08	.27	15.73	.001	.01	1.35	ns	

a. TSI = Trauma Symptom Inventory.

b. See Table 1 for explanation of scales.

c. O/I = Outpatient vs. inpatient.

d. CPA = Childhood physical abuse.

e. CSA = Childhood sexual abuse.

f. ASLT = Adult physical assault (nonrelationship).

g. S/A = Adult sexual assault.

h. Bar = Adult physical assault (in relationship).

i. Ch = Change in R^2 as a function of adding the set of interaction terms.* $p \leq .05$.

actually experience more distress than men for equivalent traumas. An equally viable possibility is that the sex differences reported here arise from sex-role-specific differences in the *expression* of psychological distress. For example, males may be equivalent to females in the actual level of their posttraumatic symptomatology, but may be more likely to inhibit their endorsement of posttraumatic difficulties for fear of being seen as weak or less masculine (Briere, 1992). Nevertheless, this sex difference is probably not due to differences between men and women in the incidence of different traumas, because the multiple regression analyses included (controlled for) specific types of childhood and adult victimization. Whatever their basis, these differences support the provision of sex-specific norms in the standardization of the TSI (Briere, 1995).

Regression analysis also indicates that, as might be expected, TSI scales reflecting anger, sexual difficulties, and acting-out behaviors are endorsed to a greater extent by younger subjects, and that psychiatric inpatients endorse most TSI scales to a greater extent than do outpatients. The age-related findings are of interest because previous research (Elliott, 1993b) indicated the need for different age norms according to whether the respondent was age 54 or younger or age 55 or older. The current data suggest that, at least for four scales, age differences may continue to appear even in those under age 55.

Perhaps of greatest interest in terms of our understanding of the impacts of traumatic events are the specific findings regarding childhood and adult victimization history. Multiple regression analyses indicated that childhood sexual abuse was associated with all 10 TSI scales, even after controlling for demographics and other childhood or adult victimization. Childhood physical abuse was the next most frequently associated with TSI scores, uniquely predicting all scales but the two involving sexual difficulties (SC and DSB). Of the adult traumas, sexual assault predicted 8 of 10 TSI scales, with 2 scales (D and IE) being especially elevated for female sexual assault victims. Less associated with TSI scales were the adult nonsexual victimization experiences: Women with nonrelationship physical assault experiences endorsed D and IE to a greater extent than did men or nonvictimized women, and men who had been battered in a relationship scored higher on DSB and SC than did women or nonbattered men. These data reinforce the impressions of some (e.g., Courtois, 1988; Friedrich, 1990) that the sexual traumas are especially and uniquely injurious. They further suggest that sexual symptoms and sexually dysfunctional behaviors (i.e., SC and DSB) are frequently sequels of sexual victimization, although men who have been battered in a relationship also may endorse sexual problems.

There are several potential shortcomings of the present study that may constrain its generalizability. First, the infrequency of certain Sex \times Victimization combinations (e.g., males reporting rape [$n = 6$] or males battered within a relationship [$n = 5$]) undoubtedly reduce the statistical power to detect certain interaction effects. Such limited sampling also reduces the external validity of any findings involving these subjects. Further, the fact that subjects' descriptions of victimization history and their responses on the TSI shared method variance (i.e., they both relied on self-reports to structured questionnaire items) may have increased the relationship between the two. Finally, the sampling strategies used to test the TSI in the present study are insufficient, in and of themselves, to allow normative interpretation of individual TSI responses. For example, the outpatient sample was likely to have overrepresented trauma victims because the recruiting therapists tended to specialize in this area. The interested reader is referred to the TSI professional manual (Briere, 1995) for normative data and for additional information on trauma history, sex, age, race, and clinical status as they affect the TSI.

In summary, the current study indicates that, as previously demonstrated in nonclinical groups, the TSI is psychometrically reliable and responsive to various traumatic phenomena. The relatively wide variety of symptoms tapped by this measure may support its use, not only as a clinical instrument but also as a research measure. With regard to the latter, the availability of more multivariate measurement systems is likely to improve our understanding of the complete range of disturbance associated with various traumatic events.

NOTES

1. The Trauma Symptom Inventory (TSI) may be obtained from Psychological Assessment Resources, P.O. Box 998, Odessa, FL 33549.

2. Because the TSI was developed as a clinical instrument, three validity scales also have been generated: *Atypical Response* (ATR), *Response Level* (RL), and *Inconsistent Response* (INC). The usefulness of these scales was not examined in the present study, as they were a result of a later phase of test development. See Briere (1995) for additional data on TSI validity scales.

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