Psychometric Study of a Brief Screen for PTSD: Assessing the Impact of Multiple Traumatic Events

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Most measures of posttraumatic stress disorder (PTSD) symptoms are limited in that they focus on a single traumatic event and cannot be used to assess symptoms in persons who report no traumatic events. The utility of the brief PTSD measures that do not key to a single trauma is limited by lengthiness and high reading levels. The Screen for Posttraumatic Stress Symptoms (SPTSS) is a brief, self-report screening instrument for PTSD symptoms that overcomes these limitations by assessing PTSD symptoms using a low reading level and without keying them to a specific traumatic event. In a sample of 136 psychiatric inpatients, the SPTSS showed good internal consistency, a high sensitivity rate, and a moderate specificity rate. The concurrent and construct validity of the SPTSS were supported by strong correlations with symptom and trauma experience measures and by comparisons of SPTSS scores of groups with different trauma histories.

Keywords: PTSD, posttraumatic stress, assessment, screening, measure

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Since the introduction of posttraumatic stress disorder (PTSD) as an official diagnostic category in 1980, the diagnostic criteria for the disorder have been based on a single-trauma model (American Psychiatric Association, 1980). In the third edition of the *Diagnostic and Statistical Manual* (*DSM-III*), in *DSM-III-R* (1987), and in *DSM-IV* (1994), Criterion A for PTSD specifies exposure to a single stressor or event, and the symptom criteria are worded with the assumption of a single traumatic event. In addition, for some symptoms, current *DSM* criteria require a causal connection between the symptom and a particular past event. For example, criterion B2 specifies that a person have "recurrent distressing dreams of the event." Because they were designed to mirror the *DSM* criteria, most measures of PTSD symptoms reflect the assumption that the client or subject has experienced and reports a single traumatic event. In addition, most

self-report and interview measures require that the client identify a link between symptoms and a particular event.

In recent years, however, findings from some PTSD studies have indicated that the single trauma model may not be the most appropriate measurement model for many clients and research participants. Furthermore, for various reasons, some clients and research participants may not report exposure to traumatic stressors even when they have been exposed to them.

Studies of exposure to traumatic stressors have revealed that many people have experienced more than one traumatic stressor. For example, in large community survey studies, 33% to 54% of individuals reported exposure to two or more potentially traumatic events over their lifetimes (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). In studies conducted at a university medical center, 63% of psychiatric inpatients and 67% of psychiatric outpatients reported lifetime exposure to two or more traumatic stressors (Davidson & Smith, 1990; Escalona, Tupler, Saur, Krishnan, & Davidson, 1997).

For persons who experience more than one traumatic event, their answers to scale questions that assume a single event may not represent their symptoms accurately or completely. For example, suppose a woman experiences multiple rapes and spousal abuse events and has nightmares twice each week in which an unknown man attacks her. How should she answer the question "How often do you have nightmares about the event?" Even if she identifies a "most distressing event" as some measures require, how does she decide whether the nightmares were "about" the particular identified trauma? In terms of completeness of trauma reports, suppose the woman also has nightmares involving her husband as an attacker. If she has identified one of the rapes as her "most distressing event," her responses to scale items keyed to a single rape event may reflect only her nightmares that seem to her to be specifically about that rape. Such difficulties in responding to some PTSD scale items may result in symptom reports that are inaccurate or incomplete.

It has also become clear that those seeking treatment do not always report potentially traumatic stressors that they have experienced. For example, studies have found that routine assessments of inpatients very frequently fail to identify childhood sexual and physical abuse experiences that may have been traumatic (Jacobson, Koehler, & Jones-Brown, 1987). Even when they are specifically asked about traumatic or abuse experiences, some people may not report their experiences. A recent study of an initial screening question for a commonly used PTSD structured interview found that it did not effectively identify those exposed to traumatic stressors. Weaver (1998) studied a sample of treatment-seeking battered women and found that 87% of those who reported childhood physical or sexual abuse in response to a behaviorally specific assessment did not report the experiences in response to the screening question for the PTSD module of the Structured Clinical Interview for *DSM-III-R* (Spitzer, Williams, & Gibbon, 1986).

In another study, women were interviewed who had been treated in a hospital emergency room following a sexual assault when they were children. Even after detailed questioning about past experiences of sexual assault, 38% of these women did not report the incident for which they had been treated at the hospital, and 16% of those who did report the incident said that at some time in the past, they did not recall the event (Williams, 1994). While underreports of traumatic events in these two studies may result from different causes and while not all persons who are exposed to traumatic stressors develop PTSD, their implications for assessing PTSD symptoms are the same: screening for PTSD using a single-reported trauma model may incorrectly classify some clients and participants who experienced, but do not report past traumatic events.

It seems, then, that most brief measures of PTSD symptoms may be limited in their usefulness by the embedded assumption that clients have experienced a single traumatic event. Measuring symptoms in this way may make it very difficult for persons who have experienced multiple traumas to

respond to scale items or may constrain them to only report symptoms related to one event, thus underreporting their full symptom picture. Use of a single-reported trauma model may also prevent adequate assessment of symptoms in clients who did experience trauma, but who do not report it because they do not realize the significance of the event, because they do not remember it, or for other reasons. Furthermore, the fact that most PTSD measures have an embedded assumption of a single traumatic stressor prevents researchers from establishing norms for the measures because they cannot be administered to control group participants who have not experienced a traumatic event.

A brief screen for PTSD symptoms that is not based on a single-reported trauma model might allow researchers and clinicians to more accurately identify persons who have high levels of these symptoms. The Screen for Posttraumatic Stress Symptoms (SPTSS) was designed to be a very brief screening instrument for PTSD symptoms that can be used with persons who report single, multiple, or no traumatic events. In addition, the SPTSS was designed to be very easy to understand and respond to so that it can be used as a self-report measure in a variety of treatment settings including nonpsychiatric medical settings.

It is important to note that the SPTSS is not meant to be a means of definitively determining a PTSD diagnosis, nor is it intended to be a precise measure of PTSD symptoms. Neither of these uses would be appropriate for this type of screen because a clinician's judgment would be necessary to confirm that all reported symptoms were associated with a traumatic stressor and to determine if a client met PTSD criteria A, E, and F (exposure to a traumatic stressor, 4-week duration of symptoms, and significant distress or impairment in functioning). Also, because SPTSS items do not explicitly link symptoms to a specific traumatic stressor, participants may report symptomatology unrelated to traumatic stressors, thus inflating some item scores and the total score.

Though reports have been published on four instruments that might be used as screens for PTSD and that do not key symptoms to a single traumatic event, certain characteristics of the SPTSS may make it preferable to these measures for use in some treatment settings. The Penn Inventory (Hammarberg, 1992), the Los Angeles Symptom Checklist (LASC; King, King, Leskin, & Foy, 1995), and the Modified PTSD Symptom Scale (MPSS; Falsetti, Resnick, Resick, & Kilpatrick, 1993) are all relatively brief measures of PTSD symptoms with good to excellent psychometric properties, but each takes considerably longer to complete than the 3 to 5 minutes required for the SPTSS. To complete the Penn Inventory, a person must read brief instructions and a total of 104 sentences (choosing one of four statements for 26 items). To complete the LASC, a person must read brief instructions and a rate each of the 43 items. To complete the MPSS, a person must read somewhat lengthy instructions and then, for 17 items, must identify one or more index events and must assign ratings for both frequency and severity. In contrast, to complete the SPTSS, a person must read the brief instructions and then assign a single rating to each of 17 statements. The PTSD Checklist (PCL) is a brief scale for PTSD that is similar in form and length to the SPTSS (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999). It does, however, have a relatively high reading level with a Flesch grade level of 13.2. The extreme brevity and very low reading level of the SPTSS may make it the a useful screen for PTSD in some treatment settings if it proves to have good psychometric characteristics.

This article describes the development of the SPTSS and its psychometric properties in a sample of psychiatric inpatients. Internal reliability analyses were conducted to investigate the consistency of responses across SPTSS items. To investigate the concurrent validity of the SPTSS, its sensitivity and specificity rates were calculated using a criterion of a PTSD diagnosis based on a structured interview. Concurrent validity was also investigated by correlating SPTSS scores with scores on this structured-interview for PTSD, with a PTSD subscale of a general symptom inventory, and with measures of dissociation and anxiety. Dissociation and anxiety are considered constructs that are closely related to

PTSD because past studies have found them to be highly correlated with PTSD symptoms (Carlson, 1997; Putnam & Carlson, 1998; Shalev, 1996). In addition, SPTSS scores of those who were assigned a PTSD diagnosis based on the structured interview were compared to scores of those were not.

Further evidence of the construct validity of the SPTSS was assessed in several ways. Three analyses were conducted to examine whether higher SPTSS scores were associated with reports of traumatic experiences. First, SPTSS scores of participants who reported traumatic events were compared to scores for those who reported no traumatic events. Unfortunately, more detailed analyses of severity of trauma is not possible for all types of trauma combined. Correlational analyses of frequency counts of different types of trauma are not useful because differences in the nature and severity of traumas of varying types mean that it is not conceptually sound to quantify trauma exposure by simply counting up diverse traumas. For example, a person exposed to four traumatic stressors was not necessarily exposed to "more" trauma than a person exposed to two traumas if the first person's traumas were only moderately stressful (such as nonfatal car accidents or a moderate earthquake) and the second person's traumas were extremely stressful (such as rape or torture).

Correlational analyses were possible for two specific types of trauma that have been related to posttraumatic symptoms (Carlson, Furby, Armstrong, & Shlaes, 1997) and that are common enough that it was possible to quantify them in this sample of inpatients. In this analysis, the frequencies of exposure to violent sexual and physical abuse experiences were correlated with SPTSS scores because we believe that those events are most likely to cause the overwhelming fear that is thought to increase the risk of traumatization (Carlson & Dalenberg, 2000). A second analysis examined the combined effects of violent sexual abuse and other traumas on SPTSS scores. Violent sexual abuse was included as a separate variable from other traumas in light of Weaver's (1998) finding that a significant proportion of persons do not report childhood abuse events in response to initial screening questions on structured interviews for PTSD. In this analysis, scores on the SPTSS were compared across four groups of participants: those who reported neither violent sexual abuse experiences nor any other traumas (violent physical abuse, adult traumas, and childhood traumas other than abuse); those who reported other traumas, but no violent sexual abuse; those who reported violent sexual abuse, but no other traumas; and those who reported both violent sexual abuse *and* other traumas. Participants reporting both types of traumatic events were expected to have higher SPTSS scores than those in the other groups.

Method

Participants

Participants in this study were a subset of participants from a larger study described in detail elsewhere (Carlson, Dalenberg, Armstrong, Daniels, Loewenstein, & Roth, 2001). Of the consecutive inpatient admissions to a large, private, nonprofit psychiatric hospital primarily serving urban and suburban areas, the participants were those persons between the ages of 30 and 45 years who were available and willing to participate in the study. The SPTSS was added as a measure midway through the study and was completed by 136 persons. Forty-six percent of the participants were male and 54% were female; 79% were Caucasian, 18% were African American, and 3% were of another race. The mean age of participants was 37.6 years. Thirty-six percent of the participants were single, 31.6% married, 30.9% separated or divorced, and 1.5% widowed. Current socioeconomic status was assessed with the Hollingshead Two-Factor Index of Social Position (Hollingshead & Redlich, 1958). With a potential range in Hollingshead Index scores from 11 to 77 (with lower scores indicating higher socioeconomic status), the mean score for participants was 43 ($SD = 17.7$).

Development of the SPTSS

Items for the SPTSS were designed to closely match the 17 *DSM-IV* symptom criteria for PTSD except that symptoms were not explicitly linked to a particular traumatic stressor. For example, the symptom criterion "recurrent distressing dreams of the event" was worded "I have bad dreams about terrible things that happened to me." The symptom

criterion "physical reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event" was worded "when something reminds me of something bad that happened to me, I feel shaky, sweaty, nervous, and my heart beats really fast." All items were in the first person and were written in simple, colloquial language. The reading level of the instructions and items is at a Flesch Grade Level of 7.5.

Instructions ask participants to choose a number between 0 and 10 to "tell how much that thing has happened to you during the past two weeks." Participants are further instructed to

> Put "0" if you never had the experience during the past two weeks, and put "10" if it was always happening to you or happened every day during the past two weeks. If it happens sometimes, but not every day, put in one of the numbers between "0" and "10" to show how much.

SPTSS scores are calculated by determining the average for the 17 item scores. Scores on the screen can therefore vary from 0 to 10.

Measures

PTSD Symptoms and Diagnosis

The Structured Interview for Post Traumatic Stress Disorder (SI-PTSD; Davidson, Smith, & Kudler, 1989) was used to quantify PTSD symptoms and to determine whether participants met criteria for a diagnosis of PTSD. The SI-PTSD assesses and quantifies the *DSM-IV* diagnostic criteria for PTSD. Interviewers inquire about past traumatic events and the 17 symptom criteria, assigning participants a score for each item on a 5-point Likert scale (ranging from 0 to 4 with labels of *not at all*, *mild*, *moderate*, *severe*, and *extremely severe*). SI-PTSD scores can range from 0 to 68. The SI-PTSD has been found to have good interrater reliability, good test-retest reliability, and good concurrent validity (Davidson et al., 1989; Davidson, Kudler, & Smith, 1990). It is important to note that SI-PTSD diagnoses were available only for 114 participants who reported one or more traumatic experiences. Due to missing item responses, SI-PTSD scores were available for only 110 of the participants though determination of diagnostic status for PTSD was possible for all participants.

A second measure of PTSD symptoms was a subscale of 28 items from the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983), a 90-item, self-report psychiatric rating scale that has been used extensively in psychiatric research and has well-established psychometric properties. The SCL-PTSD scale has been found to perform well as a screen for PTSD with sensitivity rates of 75% and 85% in two studies of women from the community (Arata, Saunders, & Kilpatrick, 1991; Saunders, Arata, & Kilpatrick, 1990).

Dissociation

The Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) was used to quantify participants' dissociative symptoms. This 28-item, self-report measure inquires about experiences of amnesia, depersonalization, derealization, absorption, and imaginative involvement. Participants are asked to circle a number to show what percentage of the time each experience happens to them. Total scores on the scale are the average of the 28 items scores and can range from 0 to 100. The DES is a widely used measure of dissociation that has been found to have strong psychometric properties (Bernstein & Putnam, 1986; Carlson, 1997; Waller, 1995).

Anxiety

The 10-item Anxiety subscale from the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983) was used to measure current level of anxiety. The SCL-90-R is a 90-item, self-report psychiatric rating scale that produces subscale scores for a variety of psychiatric symptoms. The scale has been used extensively in psychiatric research and has well-established psychometric properties. Anxiety subscale scores are the average of subscale item scores and range from 0 to 4.

Violent Physical and Sexual Abuse

Violent physical and sexual abuse experiences were assessed using structured interviews (described in detail in Carlson et al., 2001). Each structured interview was a slightly modified version of interviews used by Jacobson (Jacobson, 1989; Jacobson & Richardson, 1987). Jacobson's physical abuse interview was an adaptation of the Physical Violence scale of the Conflict Tactics Scales (Straus, 1979). In the interview for physical abuse

experiences, participants were asked whether, before the age of 18 years, they had had any of 11 specific experiences involving physical force (such as being hit, kicked, or burned) that did not involve fighting with other children. In the interview for sexual abuse experiences, participants were asked whether, before the age of 18 years, they had had any of 11 specific forced sexual experiences (such as being touched on sexual organs, being forced to touch another's sexual organs, or forced intercourse). Wording of questions about sexual and physical force experiences was factual and neutral, experiences were not labeled "abuse," and specific verbal cues were used to inquire about the occurrence of particular experiences, rather than requiring free recall. Frequencies for each type of physical and sexual force experience were assessed for up to four assailants. Because of skewness and kurtosis of raw frequency scores for physical and sexual abuse, these were transformed using common log transformations.

Scores for the frequency of violent sexual abuse and violent physical abuse were the sum of frequencies for the most violent sexual abuse events (attempted or completed oral, vaginal, or anal intercourse) and the most violent physical abuse events (being hit with an object, being kicked, bitten, or hit with a fist, being burned, being beaten, or being threatened with a gun or knife).

Information about the psychometric properties of the interviews for physical and sexual abuse is somewhat limited. In its original form, the Conflict Tactics Scale (which was the basis of the physical abuse interview) has been shown to have good reliability (Straus, Gelles, & Steinmetz, 1980) and good validity (Straus & Gelles, 1986). Test-retest reliabilities for violent abuse scores were $r = .83$ ($p < .002$, $n = 11$) for the common log of violent physical abuse frequency and $r = .98$ ($p < .00001$, $n = 12$) for the common log of violent sexual abuse frequency (Carlson et al., 2001). Correlations between violent physical and sexual abuse and PTSD structured interview scores have been found to be strong with $r = .38$ ($p < .00001$, $n = 165$) for the common log of violent physical abuse frequency and $r = .60$ ($p < .00001$, $n = 141$) for the common log of violent sexual abuse frequency (Carlson et al., 2001). Widom and Morris (1997) have found that retrospective measures of childhood sexual abuse similar to the one used in this study have some construct validity, though they are subject to error, particularly underreporting. Because of uncertainty about the validity of scores for physical and sexual abuse interviews, Henry and colleagues (Henry, Moffitt, Caspi, Langley, & Silva, 1994) suggest that these scores should not be considered precise estimates of the frequencies of these experiences, but should be used only to examine relationships among or variables.

Procedures

Data analyzed here were collected as part of a larger study which is described in more detail in Carlson et al. (2001). After obtaining informed consent for participation, participants completed self-report measures. Structured interview data were then collected in private interviews conducted by clinical psychology graduate students who were trained and supervised by on-site staff psychologists.

To maximize accuracy of retrospective experience reports, interviews were conducted by research staff members not known to participants and not involved in their treatment. In addition, sexual and physical force experiences were anchored in time relative to a life events time line constructed at the beginning of the interview.

Results

Descriptive Statistics

The mean SPTSS score for the sample of 136 inpatients was $M = 5.8$ ($SD = 2.23$) with individual scores ranging from 0.3 to 9.5. SI-PTSD scores for the 110 participants who reported traumatic events and completed the interview ranged from 1 to 60 with $M = 30$ ($SD = 15.4$) with 75% scoring above 20. This compares to a mean SI-PTSD score for the 84 participants who met *DSM-IV* criteria for PTSD of 36.6. SCL-PTSD scores ranged from 0.04 to 3.64 with $M = 1.81$ ($SD = 0.88$) and 75% scoring above 1.2. In a study of victims of violent crime, women who met *DSM-III* diagnostic criteria for PTSD had a mean score of 1.4 on the SCL-PTSD (Arata et al., 1991). DES scores ranged from 0.36 to 88 with

M = 32 (SD = 21.6) and 75% scoring above 13. In various studies, samples of individuals who were diagnosed with PTSD had mean DES scores ranging from 26 to 41, and samples of general population individuals had mean DES scores ranging from 3.7 to 7.8 (Carlson & Putnam, 1993). SCL-90-R Anxiety subscale scores ranged from 0 to 3.9 with M = 1.95 (SD = 1.04) and 75% scoring above 1.0. Mean SCL-90-R Anxiety subscale scores reported in the SCL-90-R manual for a non-patient normative cohort was .30, the mean for a psychiatric outpatient normative cohort was 1.47, and the mean for a psychiatric inpatient normative cohort was 1.48 (Derogatis, 1983).

Reliability Results

An analysis of the internal consistency of the SPTSS items yielded a Cronbach's alpha of .91. Item-total correlations were all statistically significant ($p < .00001$) and ranged from $r = .49$ to $r = .75$. Item-total correlations for 14 of the 17 items were .55 or greater, and correlations for 7 items were .68 or greater.

Validity Results

The criterion-related validity of the SPTSS was examined by calculating the sensitivity and specificity of the SPTSS compared to a criterion of a *DSM-IV* PTSD diagnosis as determined by the SI-PTSD. Of the 136 participants, the SI-PTSD was sufficiently complete to assign a diagnosis for 114 persons. The SI-PTSD could not be administered to the other 22 persons because they reported no traumatic events in response to the initial screening question. Sensitivity and specificity rates calculated using different methods of scoring the SPTSS are all shown in Table 1. First, SPTSS items scores were used to determine whether the individual met *DSM-IV* criteria for each symptom cluster. The individual was considered to have a symptom if his or her SPTSS item score for that symptom was 5 or more. Thus, for this analysis, individuals were categorized as meeting criteria for PTSD if they had a score of 5 or more on one or more symptoms from the reexperiencing cluster (SPTSS Items 11, 13, 14, 16, 17), three or more symptoms from the avoidance cluster (SPTSS Items 1, 2, 3, 4, 5, 7, 9), and two or more symptoms from the arousal cluster (SPTSS Items 6, 8, 10, 12, 15). Sensitivity and specificity rates were also calculated based on total SPTSS cutoff scores that ranged from 3.5 to 5.0.

Table 1
Sensitivity and Specificity of SPTSS

Scoring method	Sensitivity	Specificity
DSM-IV criteria: items scores ≥ 5	.90	.57
SPTSS cutoff score ≥ 3.5	.95	.50
SPTSS cutoff score ≥ 4.0	.94	.60
SPTSS cutoff score ≥ 4.5	.90	.67
SPTSS cutoff score ≥ 5.0	.85	.73

Note. SPTSS = Screen for Posttraumatic Stress Symptoms.

Table 2
Correlations Between SPTSS and Other Measures

Measure	r	p	n
SI-PTSD	.68	.00001	110
SCL-PTSD	.79	.00001	136
Dissociative Experiences Scale	.72	.00001	136
SCL-90-R Anxiety Subscale	.76	.00001	136
Violent Sexual Abuse	.45	.00001	118
Violent Physical Abuse	.24	.005	131

Note. SPTSS = Screen for Posttraumatic Stress Symptoms; SI-PTSD = Structured Interview for Posttraumatic Stress Disorder; SCL-PTSD = Symptom Checklist-Posttraumatic Stress Disorder subscale; SCL-90-R = Symptom Checklist-90-Revised. SI-PTSD scores not available for 26 participants, 4 did not complete the measure and 22 reported no traumatic event. Violent Sexual Abuse and Violent Physical Abuse scores not available for some participants who were unable to quantify their abuse experiences.

Analyses conducted to investigate the concurrent validity of the SPTSS included correlations between SPTSS scores and scores on measures of the same construct and of theoretically related symptoms. Pearson correlations between the SPTSS and the SI-PTSD, the SCL-PTSD, the DES, and the SCL-90-R Anxiety subscale score are shown in Table 2. In addition, scores on the SPTSS were compared for individuals who met *DSM-IV* criteria for PTSD according to the SI-PTSD ($M = 6.7$, $SD = 1.7$, $n = 84$) and for those who did not meet the criteria ($M = 3.8$, $SD = 2.2$, $n = 30$). The results of the comparison were significant with $t = 7.6$ ($p < .00001$).

To further investigate the construct validity of the SPTSS, SPTSS scores were compared for those who reported a traumatic event on the SI-PTSD ($M = 6.0$, $SD = 2.2$, $n = 114$) and those who did not ($M = 4.8$, $SD = 2.0$, $n = 22$). SPTSS scores for these two groups were significantly different, $t = 2.4$, $p < .02$.

Correlations between SPTSS scores and severity of specific types of trauma (violent sexual abuse and violent physical abuse) are shown in Table 2. An ANOVA analysis was also conducted to compare SPTSS scores across types of potentially traumatic stressors experienced. Participants were categorized as having experienced no violent sexual abuse experiences and no other traumas ($M = 5.2$, $SD = 2.56$, $n = 10$); other traumas, but no violent sexual abuse ($M = 4.8$, $SD = 2.13$, $n = 64$); violent sexual abuse, but no other traumas ($M = 8.4$, $SD = 0.03$, $n = 3$); or both violent sexual abuse and other traumas ($M = 6.8$, $SD = 1.77$, $n = 52$). This analysis was significant, $F(3, 126) = 11.7$, $p < .0001$. Post hoc t tests showed significant differences between the group with both types of trauma and the none and other traumas groups and between the group with violent sexual abuse and the none and other traumas groups.

Discussion

Overall, the results of this study provide evidence of the reliability and validity of the SPTSS as a screen for PTSD symptoms. Results of reliability analyses seemed to support the consistency of SPTSS scores across items. The internal consistency of the SPTSS as reflected by a Cronbach's alpha of .91 was very good in this sample. Item-total correlations were moderate to strong: all were over .49, also reflecting good internal consistency in this sample.

Results of criterion-related validity analyses based on *DSM-IV* diagnostic criteria (shown in Table 1) indicate that the SPTSS can achieve very high rates of sensitivity in identifying participants who are assigned a PTSD diagnosis. Comparable rates of sensitivity (ranging from .90 to .95) were found when SPTSS item scores and when total SPTSS cutoff scores were used to determine diagnostic categorization. Specificity of the SPTSS in identifying participants who were not assigned a PTSD diagnosis was considerably lower (ranging from .57 to .73, depending on the method used to categorize participants by SPTSS scores).

Since the sensitivity and specificity rates for the SPTSS using item scores and total scores to classify participants were similar, it seems more practical to use total SPTSS cutoff scores for screening for PTSD. Since an SPTSS score is easier to determine than diagnostic status based on item scores, the optimal cutoff score for classifying participants as having PTSD for this sample seems to be a total SPTSS score of 4.0. The sensitivity rate for that cutoff score was very high (.94) while the specificity rate was reasonably high (.60). A lower cutoff score would result in only a slight increase in sensitivity (to .95) at the cost of a sizable decrease in specificity (to .50). A higher cutoff score would result in higher specificity (.67), but would lower sensitivity to .90. Since the correct identification of those who do have PTSD should be the greatest priority for a screening instrument, it seems wise to favor high sensitivity over high specificity when choosing a cutoff score. It is important to note, however, that further research is needed on other populations before appropriate cutoff scores for clinical use can be determined. In particular, the performance of the SPTSS for use in outpatient and community populations should be investigated since these are the groups which are most likely to be screened using the SPTSS.

A number of factors may be affecting the specificity of the SPTSS. One reason for lower specificity rates in this study may be that correct classification in

regard to PTSD is particularly difficult in an inpatient population as a result of high rates of disorders with overlapping symptom criteria, such as depression. This possibility is supported by the fact that 84% of the patients in this sample who had a primary or secondary diagnosis of depression scored above the cutoff score of 4.0 on the SPTSS.

Another factor that may be affecting specificity is the fact that the criterion measure (the SI-PTSD) assessed symptoms related to a single traumatic event while the SPTSS does not key items to any particular event. While low specificity for a brief screening measure typically means that the screen is erroneously identifying individuals as having a disorder when they do not actually have the disorder, it is possible in this case that some of the apparent "false positives" who scored high on the SPTSS may represent actual cases of traumatized persons who were "missed" by the SI-PTSD because of its strict adherence to the *DSM-IV* diagnostic criteria. That is, because SI-PTSD diagnoses may reflect only symptoms related to a single, specified traumatic stressor, it is possible that some participants would have met criteria for PTSD if their symptoms relating to multiple traumatic stressors were considered. The answer to the question of which categorization of the individual is "correct" depends on whether it is reasonable or advisable to include symptoms relating to all past traumatic stressors when determining a diagnosis. While this is not the approach taken by the *DSM-IV*, it seems sensible and worth considering.

Analyses conducted to investigate the concurrent validity of the SPTSS indicate that the scale has good concurrent validity. SPTSS scores were strongly correlated with scores on a more detailed measure of PTSD symptoms (the SI-PTSD), a PTSD subscale of the SCL-90-R, a measure of dissociation, and a measure of anxiety. Correlations between these measures and the SPTSS ranged from .68 to .79. When considering correlations between the SPTSS and the other measures of PTSD (SI-PTSD and SCL-PTSD), it is important to note that in addition to differences in formats among the measures, there are differences in the reporting period for these instruments. The SPTSS inquires about symptoms over the past 2 weeks, the SI-PTSD over 4 weeks, and SCL-PTSD over 7 days.

Good concurrent validity was also indicated by the analysis of SPTSS scores for participants with and without a PTSD diagnosis based on the SI-PTSD. Scores on the SPTSS for those who met diagnostic criteria for PTSD were considerably and significantly higher than for those who did not meet the diagnostic criteria.

Analyses conducted to further investigate the construct validity of the SPTSS supported the notion that the scale accurately measures posttraumatic stress symptomatology. Those who reported traumatic experiences on the SI-PTSD scored significantly higher on the SPTSS than those who did not report any traumas, with the "traumas" group scoring lower than those who met diagnostic criteria for PTSD. Though the "traumas" group did not score much higher than the "no traumas" group, it is important to note that the "traumas" group included some participants who were exposed to traumatic stressors, but did not develop PTSD, and some who had PTSD in the past, but not currently. Furthermore, the "no traumas" group included some participants who answered "no" to the screening question, but did experience violent abuse that might have constituted a traumatic stressor. Exposure to traumatic stressors, while generally associated with higher levels of PTSD symptoms, does not always relate strongly to PTSD symptom severity.

SPTSS scores were moderately correlated with scores on a measure of violent sexual abuse ($r = .45$) and a measure of violent physical abuse ($r = .24$). Furthermore, participants who reported both violent sexual abuse and other traumas scored significantly higher on the SPTSS than participants who reported other traumas, but no violent sexual abuse, or who reported neither violent sexual abuse, nor other traumas. Participants who reported violent sexual abuse, but no other traumas, also scored significantly higher than participants who reported other traumas, but no violent sexual abuse, or who reported neither violent sexual abuse, nor other traumas. These findings of relationships of SPTSS scores to various types of

traumatic experiences all tend to support the construct validity of the SPTSS.

Compared to other brief measures of PTSD symptoms, the performance of the SPTSS in identifying those with PTSD diagnoses (sensitivity) was comparable or better, while its ability to identify those not meeting diagnostic criteria for PTSD (specificity) was comparable or somewhat poorer (Blanchard et al., 1996; Falsetti, Resick, Resnick, & Kilpatrick, 1992; Hammarberg, 1992; King et al., 1995). Given the brevity, low reading level, and high sensitivity performance of the SPTSS, it may be a useful screen in treatment settings where time efficiency and identifying potentially traumatized persons are the paramount objectives.

In conclusion, the SPTSS seems to have good internal reliability, concurrent validity, and construct validity. It may be useful as a screen for PTSD, particularly for those who have experienced multiple traumatic events, who report no past traumatic events, or who have not been asked about past traumatic events. Further validation of the SPTSS should include test-retest reliability studies and concurrent and criterion-related validity studies using a measure of PTSD symptoms that does not key symptoms to particular past traumas, such as the Trauma Symptom Inventory (Briere, 1996), the MPSS, or the PCL. In addition, though this study had too few participants to conduct an adequate factor analysis, such an analysis may be helpful in establishing the construct validity of the SPTSS. Furthermore, to answer the question of whether individuals with multiple traumas would report more symptoms on the SPTSS than on a measure with items keyed to a single traumatic event, it might be informative to compare individuals' SPTSS reports to their reports on a version of the SPTSS with items rewritten to key them to a single trauma. Lastly, the effectiveness of the SPTSS in identifying those with PTSD from outpatient and from community or general population samples should be studied to determine whether the SPTSS demonstrates adequate sensitivity and specificity in those populations.

References

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Arata, C. M., Saunders, B. E., & Kilpatrick, D. G. (1991). Concurrent validity of a crime-related posttraumatic stress disorder scale for women within the Symptom Checklist-90-Revised. *Violence and Victims, 6*, 191-199.

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*, 727-735.

Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy, 34*, 669-673.

Briere, J. (1996). *Trauma Symptom Inventory professional manual.* Odessa, FL: Psychological Assessment Resources.

Carlson, E., & Dalenberg, C. (2000). A conceptual framework for the impact of traumatic experiences. *Trauma, Violence, and Abuse, 1*, 4-28.

Carlson, E. B. (1997). *Trauma assessments: A clinician's guide.* New York: Guilford.

Carlson, E. B., Dalenberg, C., Armstrong, J., Daniels, J., Loewenstein, R., & Roth, D. (2001). Multivariate prediction of posttraumatic symptoms in psychiatric inpatients. *Journal of Traumatic Stress, 14*, 549-576.

Carlson, E. B., Furby, L., Armstrong, J., & Shlaes, J. (1997). A conceptual framework for the long-term psychological effects of traumatic childhood abuse. *Child Maltreatment, 2*, 272-295.

Carlson, E. B., & Putnam, F. W. (1993). An update on the Dissociative Experiences Scale. *Dissociation, 6*, 16-27.

Davidson, J., & Smith, R. (1990). Traumatic experiences in psychiatric outpatients. *Journal of Traumatic Stress, 3*, 459-475.

Davidson, J. R. T., Kudler, H. S., & Smith, R. D. (1990). Assessment and pharmacotherapy of posttraumatic stress disorder. In J. E. L. Giller (Ed.), *Biological assessment and treatment of posttraumatic stress disorder* (pp. 205-221). Washington, DC: American Psychiatric Press.

Davidson, J. R. T., Smith, R. D., & Kudler, H. S. (1989). Validity and reliability of the *DSM-III* criteria for posttraumatic stress disorder: Experience with a structured interview. *Journal of Nervous and Mental Disease, 177*, 336-341.

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

Escalona, R., Tupler, L. A., Saur, C. D., Krishnan, K. R. R., & Davidson, J. R. T. (1997). Screening for trauma history on an inpatient affective-disorders unit: A pilot study. *Journal of Traumatic Stress, 10*, 299-303.

Falsetti, S. A., Resick, P. A., Resnick, H. S., & Kilpatrick, D. (1992, November). *Post-traumatic stress disorder: The assessment of frequency and severity of symptoms in clinical and nonclinical samples*. Paper presentation at the Annual Convention of the Association for the Advancement of Behavior Therapy, Boston.

Falsetti, S. A., Resnick, H. S., Resick, P. A., & Kilpatrick, D. (1993). The Modified PTSD Symptom Scale: A brief self-report measure of posttraumatic stress disorder. *The Behavior Therapist, 16*, 161-162.

Hammarberg, M. (1992). Penn Inventory for Posttraumatic Stress Disorder: Psychometric properties. *Psychological Assessment, 4*, 67-76.

Henry, B., Moffitt, T. E., Caspi, A., Langley, J., & Silva, P. A. (1994). On the "remembrance of things past": A longitudinal evaluation of the retrospective method. *Psychological Assessment, 6*, 92-101.

Hollingshead, A., & Redlich, F. (1958). *Social class and mental illness*. New York: Wiley.

Jacobson, A. J. (1989). Physical and sexual assault histories among psychiatric outpatients. *American Journal of Psychiatry, 146*, 755-758.

Jacobson, A. J., Koehler, J. E., & Jones-Brown, C. (1987). The failure of routine assessment to detect histories of assault experienced by psychiatric patients. *Hospital and Community Psychiatry, 38*, 386-389.

Jacobson, A. J., & Richardson, B. (1987). Assault experiences of 100 psychiatric inpatients: Evidence of the need for routine inquiry. *American Journal of Psychiatry, 144*, 908-913.

King, D. W., King, L. A., Leskin, G., & Foy, D. W. (1995). Los Angeles Symptom Checklist: A self-report measure of posttraumatic stress disorder. *Assessment, 5*, 1-17.

Putnam, F. W., & Carlson, E. B. (1998). Hypnosis, dissociation and trauma: Myths, metaphors, and mechanisms. In J. D. Bremner & C. R. Marmar (Eds.), *Trauma, memory, and dissociation* (pp. 29-60). Washington, DC: American Psychiatric Press.

Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. L. (1993). Prevalence of civilian trauma and posttraumatic stress disorder on a representative sample of women. *Journal of Consulting and Clinical Psychology, 61*, 984-991.

Saunders, B. E., Arata, C. M., & Kilpatrick, D. G. (1990). Development of a crime-related post-traumatic stress disorder scale for women within the Symptom Checklist-90-Revised. *Journal of Traumatic Stress, 3*, 439-448.

Shalev, A. Y. (1996). Stress versus traumatic stress: From acute homeostatic reactions to chronic psychopathology. In B. A. van der Kolk, A. C. McFarlane, & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 77-101). New York: Guilford.

Smith, M. Y., Redd, W., DuHamel, K., Vickberg, S. J., & Ricketts, P. (1999). Validation of the PTSD Checklist–Civilian Version in survivors of bone marrow transplant. *Journal of Traumatic Stress, 12*, 485-499.

Spitzer, R. L., Williams, J. B., & Gibbon, M. (1986). *Structured Clinical Interview for DSM-III-R–Non-patient Version* (SCID-NP). New York: New York State Psychiatric Institute, Biometrics Research Department.

Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics Scales. *Journal of Marriage and the Family, 41*, 75-88.

Straus, M. A., & Gelles, R. (1986). Societal change and change in family violence from 1975 to 1985 as revealed by two national surveys. *Journal of Marriage and the Family, 48*, 465-479.

Straus, M. A., Gelles, R. J., & Steinmetz, S. K. (1980). *Behind closed doors: Violence in the American family*. New York: Anchor Books.

Waller, N. G. (1995). The Dissociative Experiences Scale. In J. C. Conoley & J. C. Impara (Eds.), *Twelfth mental measurements yearbook*. Lincoln: University of Nebraska Press.

Weaver, T. L. (1998). Method variance and sensitivity of screening for traumatic stressors. *Journal of Traumatic Stress, 11*, 181-185.

Widom, C. S., & Morris, S. (1997). Accuracy of adult recollection of childhood victimization: Part 2. Childhood sexual abuse. *Psychological Assessment, 9*, 34-46.

Williams, L. M. (1994). Recall of childhood trauma: A prospective study of women's memories of child sexual abuse. *Journal of Consulting and Clinical Psychology, 62*, 1167-1176.