



Published in final edited form as:

Psychol Trauma. 2019 November ; 11(8): 927–935. doi:10.1037/tra0000476.

Preliminary Psychometrics of the Structured Trauma-Related Experiences and Symptoms Screener for Adults (STRESS-A) in an Urban Prenatal Healthcare Clinic

Damion J. Grasso, Julian D. Ford, Carolyn A. Greene

Department of Psychiatry, University of Connecticut School of Medicine

Abstract

Objective.—The primary objective of the current study examined preliminary psychometric characteristics of the Structured Trauma-Related Experiences and Symptoms Screener for adults (STRESS-A), a novel self-report instrument that inventories childhood and adulthood trauma-related experiences (TREs) and assesses symptoms of posttraumatic stress disorder (PTSD) according to the Diagnostic and Statistical Manual for Mental Disorders 5th Edition (DSM-5). Designed for efficient administration and interpretation by non-clinically trained professionals, the STRESS-A is a promising tool for use in settings where mental health professionals are lacking.

Method.—A sample of 170 women in their third trimester of pregnancy and receiving services at an urban prenatal healthcare clinic completed the STRESS-A and a battery of instruments measuring mental health functioning, perceived stress, and emotion dysregulation. Tests of reliability and validity were conducted, including confirmatory factor analysis to examine the fit of STRESS-A symptom criteria relative to PTSD symptom structures supported in the literature.

Results.—Results provide initial support for internal consistency, reliability, and convergent and construct validity in a largely Hispanic pregnancy sample. The STRESS-A symptom structure fit well with several that have been supported in the literature, including the DSM-5 four-factor model.

Conclusion.—The STRESS-A is a promising tool for assessing risk associated with trauma exposure and probable DSM-5 based PTSD. Findings support its utility in a high-risk pregnancy cohort, a population that is underserved, yet shows high rates of trauma exposure and associated symptoms. Addressing maternal trauma-related impairment may have important implications for healthy fetal and child development.

Keywords

trauma exposure; posttraumatic stress disorder; pregnancy; psychometrics

The Structured Trauma-Related Experiences and Symptoms Screener for Adults (STRESS-A) is a new self-report measure of trauma-related experiences (TREs) and Diagnostic and

Statistical Manual Fifth Edition (DSM-5; 2013) defined posttraumatic stress disorder (PTSD) symptoms designed for efficient administration and interpretation by non-clinically trained professionals. The STRESS-A yields a TRE profile of PTSD qualifying traumatic stressors, as well as non-qualifying, often co-occurring adversities (e.g., homelessness, childhood neglect, emotional abuse) that occur in both childhood and adulthood. The STRESS-A assesses the four DSM-5 PTSD symptom clusters, symptoms for qualifying the dissociative specification, and aspects of functional impairment. The STRESS-A is a modified and enhanced version of the STRESS developed and validated for children and adolescents ([edited out for blind review]). The present study is the first psychometric examination of the adult version of the screening instrument, the STRESS-A.

Enhanced Features of the STRESS

The STRESS-A improves upon existing measures of trauma exposure and PTSD symptoms in several ways. First, the motivation for developing the measure was to create a tool that could be easily utilized by professionals without specific training in clinical assessment. Many existing trauma assessment tools require prerequisite skills or specialized training for administration and interpretation and are too cumbersome for non-clinically trained professionals to implement and integrate into standard practice. This may in part contribute to the lag in universal adoption of mental health screening in health care settings and other systems that lack staff specifically dedicated to mental health services. The STRESS-A is structured to facilitate ease of administration, with prompts for introducing and describing the tool to clients or patients, and an on-the-spot scoring protocol, followed by guided interpretation of results, with suggested prompts for presenting these to respondents.

Second, the STRESS-A TRE inventory of 29 PTSD qualifying traumatic events is one of the most comprehensive TRE inventories available (Frueh, Grubaugh, Elhai, & Ford, 2012), and includes 6 non-qualifying adversities that often co-occur with qualifying trauma exposure, serve as risk factors for functional impairment, and may assist with case conceptualization and service planning. These events were chosen based on a careful review of several available trauma exposure assessments, which show stark differences in terms of the number of trauma types inventoried, level of detail used to define events (e.g., physical assault vs. left a bruise), and chronicity and timing of exposure (Elhai, Gray, Kashdan, & Franklin, 2005). Inclusion of events and specific wording of questions were generated and/or reviewed by several experts in PTSD, including [edited out for blind review]. This process involved circulating early versions of the STRESS-A among authors and colleagues until informal consensus on items was achieved.

The STRESS-A TRE questions were modeled closely after the youth self-report version of the STRESS, with fully explicated questions that hone in on characteristics of the experience rather than rely on respondents to link their specific experience with a broad category of trauma. Popular measures that have been modified for DSM-5, such as the Life Events Checklist for DSM-5 (LEC-5; Weathers et al., 2013), tend to ask about broader categories of traumatic events without providing much context. For example, the STRESS-A reads “*Has a partner or spouse ever beaten you up or hit, punched, shoved, or kicked you?*” whereas the LEC-5 asks more broadly about “*physical assault (for example, being attacked, hit, slapped,*

kicked, beaten up)', which lacks any specific reference to partner-perpetrated violence. The STRESS-A includes six questions that pertain to forms of partner violence given the relatively high base-rate of this type of violence compared to non-familial types (Devries et al., 2013). Also unique is that the STRESS-A queries about experiences specific to parents who have had an extremely ill child or lost a child to death, as well as incidents of threatened violence, which may also qualify as a Criterion A stressor despite the absence of physical assault.

Third, guided scoring enables calculation of the number of types of trauma domains as a measure of cumulative trauma exposure or poly-victimization, which has gained significant attention given the well-demonstrated dose-response relationship between the number of types of exposures and a host of both physical and mental health consequences across the lifespan (Felitti et al., 1998; Finkelhor, Ormrod, and Turner, 2007). The STRESS-A TRE items can be categorized into 10 qualifying PTSD trauma domains that include non-interpersonal trauma, adult domestic violence, adult physical threatening/assault, adult sexual assault, adult witness to community violence, adult loss/illness, adult war/combat, child physical abuse, child sexual abuse, and child witness to domestic violence. One aim of the current study was to test whether the cumulative number of TRE domains predicts concurrent measures of impairment above and beyond PTSD symptoms alone.

Fourth, the STRESS-A instructs respondents to think about any of the endorsed events in the trauma history section when answering symptom questions. This method differs from many DSM-IV screens, as well as the DSM-5 modified PTSD Checklist (PCL-5; Weathers et al., 2013), which asks respondents to identify their worst event on which all symptom questions are then referred. The 'worst event' method (Breslau, Peterson, Poisson, Schultz, & Lucia, 2004) is consistent with language from DSM-IV, but inconsistent with DSM-5, which permits symptoms to refer to any or all exposures identified. An important critique of the worst event method is that it risks not capturing the full symptom presentation (Carlson, 2001), particularly given more complex presentations associated with exposure to cumulative forms of trauma across development (Cloitre et al., 2009). The worst event method assumes that symptom constructs are interchangeable across exposure types; however, symptoms and symptom reporting may be specific to types of exposures. One study reported that 16% of PTSD diagnoses would have been missed using this method (Breslau, Davis, Peterson, & Schultz, 1997).

On the STRESS-A symptom section, 23 questions assess the four DSM-5 PTSD symptom criteria, two questions assess depersonalization and derealization, the two dissociative subtype symptoms, and 6 questions assess trauma-related functional impairment, including with friends and family, co-workers, at work or school, or in the context of parenting, when applicable. Unlike the PCL-5 and similar to the PTSD Symptom Scale (PSS; Foa & Tolin, 2000), which has not yet been updated for DSM-5, symptoms are measured on a 4-point scale (*none, 1 day, 2–3 days, and most days*) that assesses frequency in a typical week of the past month). Each symptom question maps onto one of the four DSM-5 symptom clusters, Criteria B-E (i.e., intrusive symptoms, avoidance, negative changes in mood/cognition, arousal/reactivity), except that one B criterion and two D criteria symptoms each contain

two items. For diagnostic purposes, one question addresses whether symptoms persisted for more than 1 month following at least one of the endorsed events (Criterion F).

Scoring algorithms yield several values. Symptom severity is achieved by summing values assigned to each symptom within a broader cluster. For each of the three symptom criteria with two items, the maximum score is retained. A total PTSD severity score and symptom cluster specific severity scores can be calculated. In addition, information about whether DSM-5 symptom criteria are met for each symptom cluster and for a provisional PTSD diagnosis is established by first determining the presence of individual symptoms, then determining the number of symptoms present within a symptom cluster (i.e., at least 1 for clusters B and C, and 2 for clusters D and E). Each individual symptom is considered present if respondents have indicated “2–3 Days” or “Most Days”, which align with other measures that utilize this response range. A provisional DSM-5 PTSD diagnosis is indicated when (1) all symptom cluster criteria are met, (2) there is evidence of functional impairment (i.e., at least one of the 6 questions endorsed), and (3) symptoms have persisted for at least 1 month following exposure to a traumatic stressor. Additionally, provisional indication of the dissociative subtype is determined by presence of the two dissociative symptom questions.

Trauma Exposure and PTSD in Pregnancy

For the current study, pregnant women were selected as the population for this initial study of the STRESS-A based on accumulating evidence that lifetime exposure to TREs is prevalent and confers substantial risk of PTSD and its components (e.g., dissociation) and comorbidities (e.g., depression, anxiety) in this population (Seng, D’Andrea, & Ford, 2014). Pregnant women’s histories of TREs during both their childhood and adulthood are associated with adverse health behaviors and psychological states during pregnancy (Bosquet Enlow et al., 2011; Brigitte et al., 2013). This may in turn interrupt healthy fetal development and serve an etiologic role in emergent psychopathology, which can manifest in childhood and have cascading effects across the lifespan (Gragnic-Philippe, Dayan, Chokron, Jacquet, & Tordjman, 2014). A particularly pernicious pattern of risk for mothers is exposure to multiple forms of TREs, or poly-victimization, which has been associated with health risk behaviors during pregnancy (Chung et al., 2010; Seng et al., 2014), as well as biobehavioral stress reactivity in newborn infants (Bosquet et al., 2009) and re-victimization (Barrios et al., 2015) that could lead to medical complications or fetal mortality (Alhusen, Lucea, Bullock, & Sharps, 2013).

Rates of PTSD among women receiving prenatal healthcare services have been reported to range from 3% to 20% in various community samples (Kim, Harrison, Godecker, & Muzyka, 2014; Yildiz, Ayers, & Phillips, 2016), with higher rates among low-income, minority populations with known health disparities (Alcántara, Casement, & Lewis-Fernández, 2013). Several studies have linked maternal PTSD to poor outcomes in children (Nkansah-Amankra, Agbanu, & Miller, 2013).

Implementing universal screening for maternal TREs and PTSD in prenatal healthcare clinics is critical for early risk detection and the opportunity to prevent or buffer adverse pregnancy, birth, or developmental outcomes; however, it is rarely done in practice (Kim et

al., 2014). One likely contributor to this is the lack of easily implemented and appropriate screening tools. Existing tools often require specialized mental health training for administration and interpretation, which may impede adoption by prenatal healthcare clinics with limited or no social work support. Further, currently, few TRE screening tools incorporate assessment of risk associated with poly-victimization or adhere to the new DSM-5 PTSD criteria. Thus, the development of a novel TRE screening tool that addresses these limitations was warranted.

The Current Study

The current study aimed to establish preliminary psychometric properties of the STRESS-A by leveraging data obtained from a larger study designed to examine the effects of maternal exposure to trauma on prenatal stress and epigenetic changes in newborn DNA samples. The sample included 170 women receiving services at an urban prenatal care clinic during their third trimester of pregnancy. Convergent validity of the STRESS-A TRE and PTSD symptom sections was tested by examining associations with alternative measures of trauma and adversity, and concurrent measures of impairment, emotion dysregulation, and perceived stress. Internal consistency reliability was examined for each symptom cluster. Construct validity was tested by examining how well the structure of STRESS-A symptom items and their threshold responses fit the DSM-5 four-factor model, as well as four alternative models that included the anhedonia 6-factor model, hybrid 7-factor model, DSM-IV 3-factor model, and a 1-factor PTSD model. Support for the anhedonia 6-factor (Lieu et al., 12) and hybrid 7-factor (Armour et al., 2015) models has been demonstrated in recent studies that include DSM-5 symptoms (Armour et al., 2015; Lieu et al., 2014; Wang et al., 2015). Finally, incremental validity of TRE domains was examined by testing whether the number of TRE domains predicts concurrent measures of impairment above and beyond PTSD symptoms alone.

Method

Participants and Procedure

The current sample is comprised of 170 women between the ages of 18 and 44 ($M = 27.58$, $SD = 5.43$) in their third trimester of pregnancy who were receiving services from an urban prenatal care clinic and enrolled in a larger study examining the effects of maternal exposure to trauma on prenatal stress and epigenetic changes in newborn DNA samples. Enrolled participants are representative of the demographic seen at the prenatal clinic and self-identified as Black/Non-Hispanic (16.5%), Black/Hispanic (5.9%), White/Non-Hispanic (8.8%), White/Hispanic (64.7%), Asian (1.2%), or American Indian or Alaska Native/Hispanic (1.8%).

The current study was approved by the [edited out for blind review] Human Subjects Review Boards. Patients were invited via flyer by medical staff to participate in a study about prenatal stress. Interested patients contacted research staff and completed a brief in-person or telephone screen to determine eligibility. Eligibility criteria included English-speaking, nulliparous pregnancy, and plans to deliver at [edited out for blind review]. Interested participants met with study staff and completed informed consent before completing a

battery of tablet-administered questionnaires. Assessment began with a brief demographic questionnaire, followed by the STRESS-A. All other measures were administered according to the order in which they appear below. The larger study included additional collection of DNA samples from participants at birth; however, these data are not applicable to the current study and are not discussed further.

Measures

Structured Trauma-Related Experiences and Symptoms Screener for Adults (STRESS-A).—Trauma history and PTSD symptoms were assessed with the STRESS-A [citation withheld for blind review], described in detail earlier. In Part I, respondents indicated whether they had ever experienced each of 29 PTSD qualifying traumatic events and 6 non-qualifying adversities. In Part II, respondents rated the frequency of PTSD symptoms over the past week on a 4-point rating scale (0 = *none*, 1 = *1 day*, 2 = *2–3 days*, 3 = *most days*), with responses of “*2–3 days*” serving as the threshold for a positive symptom. Respondents also indicated presence or absence of 6 functional impairment items, as well as whether symptoms persisted for more than 1 month.

Prenatal Distress Questionnaire (PDQ).—The PDQ (Yali & Lobel, 1999) measured specific worries and concerns pertaining to pregnancy including medical problems, physical symptoms and bodily changes, relationships, parenting, and delivery (i.e., 0 = *not at all*, 1 = *a little*, 2 = *moderately*, 3 = *very much*, 4 = *extremely*). Several studies have supported reliability and validity in racially and ethnically diverse populations (Gennaro, Shults, & Garry, 2008; Lobel, DeVincent, Kaminer, & Meyer, 2000; Lynn, Alderdice, Crealey, & McElnay, 2011; Pluess, Bolten, Pirke, & Hellhammer, 2010). Internal consistency in the current sample was acceptable ($\alpha = .81$).

Revised Conflict Tactics Scales (CTS-2).—The 78-item CTS-2 (Straus et al., 1996) measured the presence and chronicity (i.e., *once*, *twice*, *3–5 times*, *6–10 times*, *11–20 times*, *never*) of the caregiver’s own acts of psychological aggression and physical assault toward her partner and vice versa (e.g., *I beat my partner up* and *my partner beat me up*). The CTS-2, considered one of the gold standard measures of self-reported partner violence, has well established reliability and validity in many different populations, including pregnant women (Straus, 2004; Straus & Mickey, 2012). Following recommended guidelines, psychological aggression and physical assault chronicity scores were calculated as sums of the frequency of the items in each scale. The current study used the partner-driven psychological ($\alpha = .81$) and physical ($\alpha = .93$) IPV chronicity scores.

Depression, Anxiety, Stress Scales (DASS-42).—The DASS-42 is a 42-item self-report measure of negative emotional states of depression, anxiety, and stress (0 = *did not apply to me at all*, 1 = *applied to me to some degree, or some of the time*, 2 = *applied to me to a considerable degree, or a good part of the time*, 3 = *applied to me very much, or most of the time*) that has been validated in clinical and non-clinical populations, with good convergent and discriminant validity and high internal consistency for all three scales (Antony, Bieling, Cox, Enns, & Swinson, 1998; Brown, Chorpita, Korotitsch, & Barlow, 1997; Daza, Novy, Stanley, & Averill, 2002; Lovibond & Lovibond, 1995). Each scale has

14 items, which are summed to create the depression ($\alpha = .95$), anxiety ($\alpha = .89$), and stress ($\alpha = .93$) subscales.

Difficulties in Emotion Regulation Scale (DERS).—The DERS (Gratz & Roemer, 2004) is a 36-item self-report measure of six dimensions of emotion regulation: Non-acceptance, Goals, Impulse, Strategy, Clarity, and Awareness. Respondents are instructed to indicate how often each statement applies to them on a 5-point rating scale (1 = *almost never*, 2 = *sometimes*, 3 = *about half the time*, 4 = *most of the time*, 5 = *almost always*). Examples of items include “*I experience my emotions as overwhelming and out of control*” and “*When I’m upset, I have difficulty getting my work done.*” The DERS exhibits good reliability and validity among racially diverse demographic groups (Gratz & Roemer, 2004; Ritschel, Tone, Schoemann, & Lim, 2015). The DERS total score, calculated by summing the subscale scores, was used in the current study ($\alpha = .88$).

Perceived Stress Scale (PSS).—The PSS (Cohen et al., 1983) is a 10-item measure of one’s perception of life as unpredictable, uncontrollable, and overloaded (0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *fairly often*, 4 = *very often*). The PSS is a well-validated instrument that has been used in studies of pregnant women (Gennaro, Schultz, & Garry, 2008; Uscher-Pines, Hanlon, & Nelson, 2009). The total score is the sum of all items ($\alpha = .80$).

Childhood Trauma Questionnaire (CTQ).—The 28-item CTQ (Bernstein & Fink, 1998) was used to measure maternal experience of childhood physical abuse, sexual abuse, emotional abuse, and physical neglect. Items were rated on a Likert scale (1 = *never true*, 2 = *rarely true*, 3 = *sometimes true*, 4 = *often true*, 5 = *very often true*). The CTQ has demonstrated reliability and validity for identifying abuse and neglect experiences in childhood in various adult populations (Baker, 2009). The CTQ sub-scale scores were internally consistent in the current sample ($\alpha = .82 - .96$).

Turner Life Events Scale (LES).—The LES (Turner et al., 1995) is a widely used and validated inventory of recent stressful life events, with 34-item dichotomous items measuring the presence of stressful, violent, and traumatic events occurring in the past year (e.g., *serious accident or injury, extended family member died, unwanted pregnancy, family went on welfare*). The total count of life events was used in analyses ($\alpha = .73$).

Data Analysis

Data were evaluated to ensure that assumptions of univariate and multivariate normality, linearity, and homoscedasticity were met. Pearson correlations, *t*-tests, linear and logistic regression, and internal consistency analyses were conducted using SPSS version 23.0. *Mplus* 8 (Muthén & Muthén, 2017) was used to conduct confirmatory factor analysis (CFA) on the 20 dichotomous criterion symptoms of the DSM-5 PTSD diagnosis (i.e., presence vs. absence based on a cutoff of 2). As compared to applying CFA to continuous symptom scores, this approach more closely reflects the scoring rules used by the STRESS-A to ascertain a provisional PTSD diagnosis. Because the assumptions behind maximum likelihood (ML) estimation are often not met when binary outcomes are used (Muthén &

Kaplan, 1992), robust weighted least squares (WLS) estimation was used. This estimation approach draws on tetrachoric correlations among the binary items and their asymptotic covariance matrix and has been shown to outperform ML estimation (Beauducel & Herzberg, 2006; Brown, 1984; Muthén & Kaplan, 1992). Further, robust WLS estimation has been shown to produce less biased parameter estimates, standard errors, and test statistics with moderate to small sample sizes (e.g., 15–200; Flora & Curran, 2004). Goodness of fit indices for the WLS estimation include the weighted root-mean-square residual (WRMR), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the root-mean-square error of approximation (RMSEA). With WLS estimation, suggested cutoff values for these fit indices include TLI ≥ 0.96 , CFI ≥ 0.96 , RMSEA ≤ 0.05 , and WRMR ≤ 0.95 (Yu, 2002). CFA was used to examine model fit for the DSM-5 4-factor model, as well as alternative models that included the anhedonia 6-factor model, hybrid 7-factor model, DSM-IV 3-factor model, and a 1-factor PTSD model; however, there is no formal test to compare non-nested models when using WLS.

Results

STRESS-A Trauma-Related Experiences (TREs), Symptoms, and Impairment

The majority (78.2%) of the sample endorsed exposure to at least one PTSD qualifying traumatic event on the STRESS-A: 75.3% during adulthood, and 35.9% during childhood. Number of trauma domains ranged from 0 to 6 ($M = 1.74$, $SD = 1.43$) in adulthood, 0 to 4 ($M = 0.59$, $SD = 0.96$) in childhood, and 0 to 10 ($M = 2.34$, $SD = 2.03$) total. For rates of each TRE domain and the specific items that make up each domain see Supplemental Table 1. Across all domains, Loss/Illness was the most commonly endorsed (62.9%), followed by non-interpersonal trauma (47.6%). Responses to the two “*something else really scary or very bad*” items, endorsed by 14.1% for adulthood TREs and 16.5% for childhood TREs, varied and overlapped with existing categories. Although these items were not included in the total TRE counts as separate events, closer examination of items revealed that when re-categorized into domains (e.g., “*beaten by ex-partner*” to adult domestic violence), all were previously captured by other items, except for those not considered to be PTSD qualifying events (i.e., “*my husband got arrested once*”, “*getting lost*”).

Other adversities categorized as non-qualifying events included homelessness, not having enough to eat as a child, possible educational neglect, being separated from a loved one for more than a few days, having a family member arrested or put in jail, and possible emotional abuse. Rates ranged from 10% to 36.5% and are presented at the bottom of Supplemental Table 1. Total number of other adversities ranged from 0 to 5 ($M = 0.93$, $SD = 1.17$) and were positively correlated with number of TRE domains in childhood ($r = .64$) and adulthood ($r = .42$).

Total symptom severity scores ranged from 0 to 80 ($M = 21.61$, $SD = 20.75$). Intrusive symptoms ranged from 0 to 20 ($M = 5.38$, $SD = 5.39$), avoidance symptoms from 0 to 8 ($M = 2.49$, $SD = 2.66$), mood/cognition symptoms from 0 to 28 ($M = 7.75$, $SD = 8.10$), and arousal/reactivity symptoms from 0 to 24 ($M = 5.99$, $SD = 6.37$). Of the sample, 62.9% met Criterion B, with ≥ 1 intrusive symptoms rated at two or greater, 48.8% met Criterion C, with ≥ 1 positive avoidance symptoms, 45.3% met Criterion D, with ≥ 2 positive mood/

cognition symptoms, and 44.7% met Criterion E, with 2 positive arousal/reactivity symptoms. Dissociation severity ranged from 0 to 12 ($M = 1.47$, $SD = 2.64$), with 26.5% having at least one positive dissociation symptom (i.e., 2). As expected, all symptom subscale severity scores were positively intercorrelated (r s from .76 to .86) and positively correlated with total symptom severity (r s from .89 to .95), dissociation severity (r s from .66 to .80), and total number of TRE domains on the STRESS-A (r s from .23 to .26; see Supplemental Table 2). Total symptom severity also was positively correlated with total number of non-qualifying, other adversities ($r = .22$).

Of the sample, 31.8% endorsed one or more functional impairment items. In addition, 52.9% said “yes” to whether symptoms have persisted for at least the past month. Using DSM-5 symptom criteria, 32.4% of the sample met criteria for a probable diagnosis of PTSD based on meeting all four symptom criteria. Requiring evidence of impairment (i.e., 1 impairment item) reduced this percentage to 15.3%. Requiring impairment and endorsement that symptoms persisted for at least the past month further reduced this percentage, with 12.9% of the sample meeting the strictest criteria for a PTSD diagnosis.

Convergent Validity

Alternative measures of adversity and trauma.—Total STRESS-A TRE domains were positively correlated with alternative measures of adversity and trauma, including total severity on the CTQ, number of past year events on the LES, and psychological and physical partner violence chronicity on the CTS-2 (r s from .31 to .49; see Supplemental Table 3). Additionally, many of these alternative measures were positively correlated with STRESS-A symptom subscale scores and total symptom severity.

Measures of impairment, emotion dysregulation, and perceived stress.—Total STRESS-A TRE domains were positively correlated with the DASS-42 subscales (r s from .39 – .41), disrupted emotion regulation ($r = .20$), prenatal distress ($r = .26$), and perceived stress ($r = .35$; see Table 1). Total number of non-qualifying, other adversities was also positively correlated with depression ($r = .28$), anxiety ($r = .29$), stress reactivity ($r = .32$), prenatal distress ($r = .16$), and perceived stress ($r = .23$), and disrupted emotion regulation ($r = .19$). STRESS-A symptom subscale severity scores, total symptoms, and dissociation severity were positively correlated with the DASS-42 scales (r s from .26 – .38), disrupted emotion regulation (r s from .22–.30), prenatal distress (r s from .27 – .33), and perceived stress (r s from .29 – .34).

Reliability

Table 2 presents the mean, standard deviation, skewness, and median score for each of the 23 symptom questions, as well as the correlation between each item and the total symptom score. Cronbach’s α for the total symptom severity score was .96 and remained high for all PTSD symptom subscale scores (range from $\alpha = .81$ – .92). There were no significant differences in these values by age or race/ethnicity (all p s > .05).

Construct validity

A CFA using robust weighted least squares (WLS) tested how well the structure of the STRESS-A symptom items and their threshold response (i.e., 2) fit the DSM-5 four-factor model, as well as three alternative models that have been supported in the literature and that include the anhedonia 6-factor model, hybrid 7-factor model, and DSM-IV 3-factor model. Goodness of fit indices for the WLS estimation are presented in Table 3. All models, except the 1-factor PTSD model, demonstrated adequate fit to the data based on recommended cutoff criteria (Yu, 2002). Fit indices for the DSM-5 4-factor model, the anhedonia 6-factor model, and the hybrid 7-factor model were relatively stronger than the DSM-IV 3-factor model. Standardized item loadings for all CFA models are presented in Supplemental Table 4.

Incremental validity of TRE domains

Linear and logistic regression analyses tested whether the number of TRE domains predicts concurrent impairment above and beyond PTSD symptom severity alone. Controlling for PTSD symptom severity and number of other adversities, number of TRE domains positively predicted DASS-42 depression, $B = 1.32$, $SE = 0.30$, $t = 4.37$, $p < .001$, anxiety, $B = 0.93$, $SE = 0.23$, $t = 4.06$, $p < .001$, stress reactivity, $B = 1.36$, $SE = 0.32$, $t = 4.28$, $p < .001$, prenatal distress, $B = 0.59$, $SE = 0.26$, $t = 2.22$, $p = .028$, and perceived stress, $B = 1.10$, $SE = 0.28$, $t = 3.87$, $p < .001$, but not emotion dysregulation on the DERS ($p > .05$).

Discussion

This study evaluated preliminary psychometric characteristics of the STRESS-A in a primarily Hispanic/Latino sample of pregnant women seen at an urban prenatal healthcare clinic. The sample represented women with extensive histories of both adulthood and childhood TREs, with an average of about 2 different types of TRE domains experienced in their lifetime. The prevalence of probable PTSD based on having met the four DSM-5 symptom criteria was about 32%; however, dropped to 13% when requiring endorsement of one or more of the impairment items and evidence that symptoms were present for at least the past month. While the relaxed criteria yield an estimate that is substantially higher than reported in other studies of pregnant women in which DSM-IV defined PTSD ranged from 3% to 13% based on semi-structured diagnostic interviews (Loveland Cook et al., 2004; Seng, Low, Sperlich, Ronis, & Liberzon, 2009; Yonkers et al., 2014), the more restrictive estimate falls well within this range.

Multiple aspects of reliability and validity were supported for the STRESS-A. Convergent validity of the STRESS-A TRE section was supported by significant correlations between the total number of TRE domains and alternative measures of adversity and trauma, including childhood trauma assessed via the CTQ, past year stressful life events on the LES, and psychological and physical partner violence chronicity on the CTS-2. As additional evidence, number of TRE domains correlated with PTSD severity on the STRESS-A, as well as other measures of impairment, emotion dysregulation, and perceived stress.

Reliability of STRESS-A symptom scores was demonstrated by good internal consistency of the total PTSD symptom score and the Criterion B, C, D, and E subscale scores. Convergent validity of the STRESS-A symptom scores was consistently supported by significant and positive correlations with depression, anxiety, and stress reactivity on the DASS-42, emotion dysregulation on the DERS, perceived stress on the PSS, and prenatal distress on the PDQ. These findings reflect the high co-occurrence of PTSD symptoms with depression and anxiety among pregnant women (Loveland Cook et al., 2004; Seng et al., 2009), as well as with negative emotional states such as emotion regulation difficulties, perceived stress, and pregnancy-related worries (Bosquet Enlow et al., 2011; Brigitte et al., 2013). Irrespective of a PTSD diagnosis, these findings suggest that subthreshold PTSD may still warrant attention, especially given what is known about the relationship between maternal stress during pregnancy and adverse pregnancy and birth outcomes, as well as risk for developing health problems in infancy and beyond (Morland et al., 2007).

A factor analysis of criterion symptoms from the STRESS-A demonstrated good fit for several models that have received support from the literature (Armour et al., 2015), including the DSM-5 4-factor model, from which symptom questions were derived, the anhedonia 6-factor model, and the hybrid 7-factor model. Evidence from the current study supports the construct validity of the STRESS-A for assessing both trauma history and PTSD symptoms, and thus for clinical and research screening for potential clinical-level PTSD, among pregnant women.

A final question pertained to whether knowledge of poly-victimization, as defined here using number of TRE domains, was predictive of concurrent impairment above and beyond PTSD symptom severity. Results revealed this to be the case, with number of TRE domains associated with concurrent measures of depression, anxiety, stress reactivity, and perceived stress. These findings suggest potential value in incorporating a measure of the scope of trauma exposure, in terms of diversity of types, into risk assessment protocols implemented within prenatal care clinics. In some respect, assessing exposure to various types of TREs using checklists may require less effort from respondents than rating frequency or severity of symptoms and may be a useful means of identifying individuals most in need of mental health or supportive resources.

Relatedly, the finding that other, non-qualifying adversities (e.g., possible emotional or educational neglect, having a family member arrested) were associated with number of TRE domains, PTSD symptom severity, and other measures of impairment highlights the possible importance of these, often co-occurring, forms of adversity in understanding the context of one's experiences, estimating risk, and case conceptualization and planning. These experiences likely add to the cumulative risk associated with poly-victimization and chronic exposure to childhood adversities. Few trauma history measures assess these co-occurring adversities. More work should be done to determine whether expanding upon this assessment in future iterations of the STRESS-A may provide added value.

Results from the current study are promising and provide initial support for the reliability and validity of the STRESS-A. However, these findings should be interpreted as preliminary due to the use of a convenience sample that, while ethnoculturally diverse, cannot be

generalized to women who are not in prenatal care, nor to men, without replication with those broader populations. Additional work is necessary to establish criterion validity to gold-standard PTSD assessment, test-retest reliability, and predictive validity with regards to pregnancy and birth, as well as developmental outcomes. Nevertheless, these results are encouraging that an easily-implemented and interpreted, self-report measure can be utilized as a first-stage screener for identifying maternal TREs and PTSD in prenatal care clinics.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This research was partially funded by the Connecticut Institute for Clinical and Translational Science (CICATS). Julian Ford is the co-owner of Advanced Trauma Solutions, Inc., the sole licensed distributor by the University of Connecticut of the TARGET© traumatic stress intervention and curriculum. The authors do not have any financial disclosures to report.

References

- Alcántara C, Casement MD, & Lewis-Fernández R (2013). Conditional risk for PTSD among Latinos: A systematic review of racial/ethnic differences and sociocultural explanations. *Clinical Psychology Review*, 33(1), 107–119. doi: 10.1016/j.cpr.2012.10.005 [PubMed: 23159328]
- Alhusen JL, Lucea MB, Bullock L, & Sharps P (2013). Intimate partner violence, substance use, and adverse neonatal outcomes among urban women. *Journal of Pediatrics*, 163(2), 471–476. doi: 10.1016/j.jpeds.2013.01.036 [PubMed: 23485028]
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*: American Psychiatric Pub.
- Antony MM, Bieling PJ, Cox BJ, Enns MW, & Swinson RP (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment*, 10(2), 176. doi: 10.1037/1040-3590.10.2.176
- Armour C, Tsai J, Durham TA, Charak R, Biehn TL, Elhai JD, & Pietrzak RH (2015). Dimensional structure of DSM-5 posttraumatic stress symptoms: Support for a hybrid anhedonia and externalizing behaviors model. *Journal of Psychiatric Research*, 61, 106–113. doi:10.1016/j.jpsychires.2014.10.012 [PubMed: 25479765]
- Baker AJ (2009). Adult recall of childhood psychological maltreatment: Definitional strategies and challenges. *Children and Youth Services Review*, 31(7), 703–714. doi: 10.1016/j.childyouth.2009.03.001
- Barrios YV, Gelaye B, Zhong Q, Nicolaidis C, Rondon MB, Garcia PJ, ... Williams MA (2015). Association of childhood physical and sexual abuse with intimate partner violence, poor general health and depressive symptoms among pregnant women. *PLoS One*, 10(1), e0116609. doi:10.1371/journal.pone.0116609 [PubMed: 25635902]
- Beauducel A, & Herzberg PY (2006). On the performance of maximum likelihood versus means and variance adjusted weighted least squares estimation in CFA. *Structural Equation Modeling*, 13, 186–203. doi:10.1207/s15328007sem1302_2
- Bernstein D, & Fink L (1998). *Childhood Trauma Questionnaire: A retrospective self-report manual*. San Antonio, TX: The Psychological Corporation.
- Bosquet Enlow M, Kitts RL, Blood E, Bizarro A, Hofmeister M, & Wright RJ (2011). Maternal posttraumatic stress symptoms and infant emotional reactivity and emotion regulation. *Infant Behavior & Development*, 34(4), 487–503. doi:10.1016/j.infbeh.2011.07.007 [PubMed: 21862136]
- Brigitte L, Ruth S, Emina B, Gisela G, Werner R, & Sibil T (2013). Prenatal care in adult women exposed to childhood sexual abuse. *Journal of Perinatal Medicine*. doi:10.1515/jpm-2011-0086

- Breslau N, Lucia VC, & Davis GC (2004). Partial PTSD versus full PTSD: An empirical examination of associated impairment. *Psychological Medicine*, 34(7), 1205–1214. doi: 10.1017/S0033291704002594 [PubMed: 15697047]
- Browne MW (1984). Asymptotic distribution free methods in the analysis of covariance structures. *British Journal of Mathematical and Statistical Psychology*, 37, 127–141. doi: 10.1111/j.2044-8317.1984.tb00789.x
- Brown TA, Chorpita BF, Korotitsch W, & Barlow DH (1997). Psychometric properties of the Depression Anxiety Stress Scales (DASS) in clinical samples. *Behaviour Research and Therapy*, 35, 79–89. doi: 10.1016/S0005-7967(96)00068-X [PubMed: 9009048]
- Carlson EB (2001). Psychometric study of a brief screen for PTSD: Assessing the impact of multiple traumatic events. *Assessment*, 8(4), 431–441. doi: 10.1177/107319110100800408 [PubMed: 11785587]
- Chung EK, Nurmohamed L, Mathew L, Elo IT, Coyne JC, & Culhane JF (2010). Risky health behaviors among mothers-to-be: The impact of adverse childhood experiences. *Academic Pediatrics*, 10(4), 245–251. doi: 10.1016/j.acap.2010.04.003 [PubMed: 20599179]
- Cloitre M, Stolbach BC, Herman JL, van der Kolk B, Pynoos R, Wang J, & Petkova E (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, 22(5), 399–408. doi: 10.1002/jts.20444 [PubMed: 19795402]
- Cohen S, Kamarck T, & Mermelstein R (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385–396. doi:10.2307/2136404 [PubMed: 6668417]
- Daza P, Novy DM, Stanley MA, & Averill P (2002). The Depression Anxiety Stress Scale-21: Spanish translation and validation with a Hispanic sample. *Journal of Psychopathology and Behavioral Assessment*, 24, 195–205. doi: 10.1023/A:1016014818163
- Devries KM, Mak JY, Garcia-Moreno C, Petzold M, Child JC, Falder G, ... Rosenfeld L (2013). The global prevalence of intimate partner violence against women. *Science*, 340(6140), 1527–1528. doi: 10.1126/science.1240937 [PubMed: 23788730]
- Elhai JD, Gray MJ, Kashdan TB, & Franklin CL (2005). Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects?: A survey of traumatic stress professionals. *Journal of Traumatic Stress*, 18, 541–545. doi: 10.1002/jts.20062 [PubMed: 16281252]
- Enlow MB, Kullowatz A, Staudenmayer J, Spasojevic J, Ritz T, & Wright RJ (2009). Associations of maternal lifetime trauma and perinatal traumatic stress symptoms with infant cardiorespiratory reactivity to psychological challenge. *Psychosomatic Medicine*, 71(6), 607. doi: 10.1097/PSY.0b013e3181ad1c8b [PubMed: 19553287]
- Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, ... Marks JS (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults - The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245–258. doi: 10.1016/s0749-3797(98)00017-8 [PubMed: 9635069]
- Finkelhor D, Ormrod RK, & Turner HA (2007). Polyvictimization and trauma in a national longitudinal cohort. *Development and Psychopathology*, 19(1), 149–166. doi: 10.1017/S0954579407070083 [PubMed: 17241488]
- Flora DB, & Curran PJ (2004). An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychological Methods*, 9(4), 466. [PubMed: 15598100]
- Foa EB, & Tolin DF (2000). Comparison of the PTSD Symptom Scale–Interview version and the Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*, 13(2), 181–191. doi: 10.1023/A:1007781909213 [PubMed: 10838669]
- Ford JD, Racusin R, Rogers K, Ellis C, Schiffman J, Ribbe D, & Edwards J (2002). Traumatic Events Screening Inventory for Children (TESI-C) Version 8.4. National Center for PTSD and Dartmouth Child Psychiatry Research Group, Dartmouth VT.
- Frueh C, Grubaugh A, Elhai JD, & Ford JD (2012). *Assessment and Treatment Planning for PTSD*: John Wiley & Sons.

- Gennaro S, Shults J, & Garry DJ (2008). Stress and preterm labor and birth in black women. *Journal of Obstetric and Gynecological Nursing*, 37, 538–545. doi: 10.1111/j.1552-6909.2008.00278.x
- Graignic-Philippe R, Dayan J, Chokron S, Jacquet AY, & Tordjman S (2014). Effects of prenatal stress on fetal and child development: A critical literature review. *Neurosci Biobehav Rev*, 43, 137–162. doi:10.1016/j.neubiorev.2014.03.022 [PubMed: 24747487]
- Grasso DJ, Felton JW, & Reid-Quiñones K (2015). The Structured Trauma-Related Experiences and Symptoms Screener (STRESS) Development and Preliminary Psychometrics. *Child Maltreatment*, 20(3), 214–220. doi: 10.1177/1077559515588131 [PubMed: 26092442]
- Gratz KL, & Roemer L (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, 26, 41–54. doi: 10.1023/B:JOBA.0000007455.08539.94
- Kim HG, Harrison PA, Godecker AL, & Muzyka CN (2014). Posttraumatic stress disorder among women receiving prenatal care at three federally qualified health care centers. *Maternal and Child Health Journal*, 18(5), 1056–1065. doi:10.1007/s10995-013-1333-7 [PubMed: 23912314]
- Liu P, Wang L, Cao C, Wang R, Zhang J, Zhang B, et al. (2014). The underlying dimensions of DSM-5 posttraumatic stress disorder symptoms in an epidemiological sample of Chinese earthquake survivors. *Journal of Anxiety Disorders*, 28, 345–351. doi: 10.1016/j.janxdis.2014.03.008 [PubMed: 24792723]
- Lobel M, DeVincent CJ, Kaminer A, & Meyer BA (2000). The impact of prenatal maternal stress and optimistic disposition on birth outcomes in medically high-risk women. *Health Psychology*, 19, 544–553. doi: 10.1037/0278-6133.19.6.544 [PubMed: 11129357]
- Loveland Cook CA, Flick LH, Homan SM, Campbell C, McSweeney M, & Gallagher ME (2004). Posttraumatic stress disorder in pregnancy: Prevalence, risk factors, and treatment. *Obstetrics and Gynecology*, 103(4), 710–717. doi:10.1097/01.AOG.0000119222.40241.fb [PubMed: 15051563]
- Lovibond PF, & Lovibond SH (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. doi: 10.1016/0005-7967(94)00075-U [PubMed: 7726811]
- Lynn F, Alderdice F, Crealey GE, & McElnay J (2011). Associations between maternal characteristics and pregnancy-related stress among low-risk mothers: An observational cross-sectional study. *International Journal of Nursing Studies*, 48, 620–627. doi: 10.1016/j.ijnurstu.2010.10.002 [PubMed: 21087767]
- Morland L, Goebert D, Onoye J, Frattarelli L, Derauf C, Herbst M, ... Friedman M (2007). Posttraumatic stress disorder and pregnancy health: Preliminary update and implications. *Psychosomatics*, 48(4), 304–308. doi:10.1176/appi.psy.48.4.304 [PubMed: 17600166]
- Muthén B, & Kaplan D (1992). A comparison of some methodologies for the factor-analysis of non-normal Likert variables: A note on the size of the model. *British Journal of Mathematical and Statistical Psychology*, 45, 19–30. doi: 10.1111/j.2044-8317.1992.tb00975.x
- Nkansah-Amankra S, Agbanu SK, & Miller RJ (2013). Disparities in health, poverty, incarceration, and social justice among racial groups in the United States: A critical review of evidence of close links with neoliberalism. *International Journal of Health Services*, 43(2), 217–240. doi: 10.2190/HS.43.2.c [PubMed: 23821903]
- Pluess M, Bolten M, Pirke KM, & Hellhammer D (2010). Maternal trait anxiety, emotional distress, and salivary cortisol in pregnancy. *Biological Psychology*, 83, 169–175. doi: 10.1016/j.biopsycho.2009.12.005 [PubMed: 20026376]
- Ritschel LA, Tone EB, Schoemann AM, & Lim NE (2015). Psychometric properties of the Difficulties in Emotion Regulation Scale across demographic groups. *Psychological Assessment*, 27(3), 944. doi: 10.1037/pas0000099 [PubMed: 25774638]
- Seng JS, D'Andrea W, & Ford JD (2014). Complex mental health sequelae of psychological trauma among women in prenatal care. *Psychological Trauma*, 6(1), 41–49. doi:10.1037/a0031467 [PubMed: 25558308]

- Seng JS, Low LK, Sperlich M, Ronis DL, & Liberzon I (2009). Prevalence, trauma history, and risk for posttraumatic stress disorder among nulliparous women in maternity care. *Obstetrics and Gynecology*, 114(4), 839–847. doi:10.1097/AOG.0b013e3181b8f8a2 [PubMed: 19888043]
- Straus MA (2004). Cross-cultural reliability and validity of the Revised Conflict Tactics Scales: a study of university student dating couples in 17 nations. *Cross-Cultural Research*, 38(4), 407–432. doi: 10.1177/1069397104269543
- Straus MA, & Mickey EL (2012). Reliability, validity, and prevalence of partner violence measured by the conflict tactics scales in male-dominant nations. *Aggression and Violent Behavior*, 17(5), 463–474. doi: 10.1016/j.avb.2012.06.004
- Turner RJ, Wheaton B, & Lloyd DA (1995). The epidemiology of social stress. *American Sociological Review*, 104–125. doi: 10.2307/2096348
- Uscher-Pines L, Hanlon AL, & Nelson DB (2009). Racial differences in bacterial vaginosis among pregnant women: The relationship between demographic and behavioral predictors and individual BV-related microorganism levels. *Maternal Child Health Journal*, 13, 512–519. doi: 10.1007/s10995-008-0372-y [PubMed: 18543090]
- Wang L, Zhang L, Armour C, Cao C, Qing Y, Zhang J, ... & Fan G (2015). Assessing the underlying dimensionality of DSM-5 PTSD symptoms in Chinese adolescents surviving the 2008 Wenchuan earthquake. *Journal of Anxiety Disorders*, 31, 90–97. doi: 10.1016/j.janxdis.2015.02.006 [PubMed: 25768398]
- Weathers FW, Blake DD, Schnurr PP, Kaloupek DG, Marx BP, & Keane TM (2013). The Life Events Checklist for DSM-5 (LEC-5). Instrument available from the National Center for PTSD at www.ptsd.va.gov.
- Weathers FW, Litz BT, Keane TM, Palmieri PA, Marx BP, & Schnurr PP (2013). The PTSD Checklist for DSM-5 (PCL-5). Scale available from the National Center for PTSD at www.ptsd.va.gov.
- Yildiz PD, Ayers S, & Phillips L (2016). The prevalence of posttraumatic stress disorder in pregnancy and after birth: A systematic review and meta-analysis. *Journal of Affective Disorders*. doi: 10.1016/j.jad.2016.10.009
- Yonkers KA, Smith MV, Forray A, Epperson CN, Costello D, Lin H, & Belanger K (2014). Pregnant women with posttraumatic stress disorder and risk of preterm birth. *JAMA Psychiatry*, 71(8), 897–904. doi:10.1001/jamapsychiatry.2014.558 [PubMed: 24920287]
- Yu CY (2002). Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes (Vol. 30). Los Angeles: University of California, Los Angeles.

Clinical Impact Statement

The current study provides empirical data to support the use of the Structured Trauma-Related Experiences and Symptoms Screener for Adults (STRESS-A) for identifying a history of psychological trauma and determining risk for posttraumatic stress disorder (PTSD) as defined by the Diagnostic and Statistical Manual of Mental Disorders. The STRESS-A was designed for ease-of-use by non-clinical professionals and adds to the menu of options for implementing and sustaining screening protocols in settings and systems with diverse needs and populations with high risk for trauma-related mental health problems.

Table 1
Pearson Correlations between STRESS Variables and Alternative Measures of Symptomatology

Variable	DERS Disrupted					Perceived Stress
	DASS Depression	DASS Anxiety	DASS Reactivity	Emotion Regulation	Prenatal Distress	
Total Trauma Domains	.41**	.39***	.41**	.20*	.26**	.35***
Intrusive	.29**	.32**	.36**	.30**	.33**	.29**
Avoidance	.26**	.26**	.34**	.22*	.30**	.34**
Mood/Cognition	.33**	.36**	.36**	.32**	.30**	.32**
Arousal/Reactivity	.26**	.31**	.35**	.25**	.27**	.33**
Dissociation	.12	.14*	.16*	.19*	.17*	.19*
Total Symptoms	.32**	.36***	.38**	.31**	.33**	.34**

Note. $N = 170$. DASS = Depression, Anxiety, Stress Scales; DERS = Disrupted Emotion Regulation Scale.

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 2

STRESS-A Item Characteristics and Correlations with Total Score

	Items	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Mdn</i>	<i>r</i>
B ₁	Thoughts/memories pop up into my mind	1.26	1.43	0.76	1	.59
B ₂	Scary dreams/nightmares about what happened	1.18	1.35	0.78	1	.72
B _{3a}	Memories make me lose track of time	0.91	1.49	1.29	0	.75
B _{3b}	Was happening now or reliving it	1.00	1.39	1.09	0	.65
B ₄	Really upset when something similar happens	1.04	1.46	1.07	0	.65
B ₅	When something reminds me body feels sick	1.19	1.47	0.85	0.5	.73
C ₁	Keep body from feeling ways that remind me	1.04	1.55	1.06	0	.76
C ₂	Try to get away when reminded	0.99	1.47	1.11	0	.74
D ₁	Hard to remember parts of what happened	0.86	1.39	1.35	0	.67
D _{2a}	Am a bad person or something wrong with me	0.91	1.41	1.21	0	.70
D _{2b}	World a bad place/not as good as it used to be	1.14	1.44	0.83	0	.72
D _{3a}	Think part of what happened was my fault	0.81	1.41	1.52	0	.76
D _{3b}	Think part of what happened was others' fault	0.97	1.49	1.18	0	.77
D ₄	Feel really bad (mad, scared, sad) most of day	0.92	1.37	1.28	0	.77
D ₅	Bored doing things usually like to do	1.38	1.51	0.55	1	.73
D ₆	Feel lonely even when with family/friends	1.09	1.41	0.95	0	.75
D ₇	Feel like I really love my friends and family	1.00	1.47	1.13	0	.78
E ₁	Feel really grumpy	0.82	1.28	1.44	0	.76
E ₂	Do things others think are dangerous	0.78	1.45	1.52	0	.73
E ₃	Look around in case something bad happens	0.86	1.36	1.32	0	.76
E ₄	Really scared when unexpected happens	0.86	1.33	1.41	0	.71
E ₅	Feel like could not focus on things	1.18	1.37	0.77	1	.75
E ₆	Wake at night/trouble falling back to sleep	1.48	1.37	0.31	1.5	.70
Y ₁	Feel like didn't know self or own body; stranger	0.78	1.39	1.54	0	.77
Y ₂	Feel like people/places seemed strange; dream	0.69	1.38	1.78	0	.76

Note. $N = 170$. Items questions are paraphrased. For B₃, D₂, D₃, the highest value between the two items (e.g., B_{3a} and B_{3b}) is used to fulfill that criterion symptom. The two dissociative symptom questions (Y₁ and Y₂) are not calculated into the total PTSD symptom severity score. All correlations significant at $p < .001$.

Table 3
 Confirmatory Factor Analysis Model with Dichotomous Outcomes: Model Fit Indices

Model	χ^2	df	RMSEA	95% CI		CFI	TLI	WRMR
				Lower	Upper			
DSM-5 four-factor	191.74	164	.032	.000	.049	.994	.993	.745
Anhedonia six-factor	175.87	155	.028	.000	.047	.995	.994	.698
Hybrid seven-factor	173.38	149	.031	.000	.049	.994	.993	.692
DSM-IV three-factor	211.92	168	.039	.000	.055	.990	.988	.827
PTSD One-Factor	258.08	173	.054	.000	.067	.980	.978	.997

Note. $N = 170$ for all models. *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*; *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition*, RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis Index; WRMR = weighted root mean square residual.