Published in final edited form as:

Assessment. 2017 June ; 24(4): 503–516. doi:10.1177/1073191115615212.

The Dissociative Subtype of PTSD Scale (DSPS): Initial Evaluation in a National Sample of Trauma-Exposed Veterans

Erika J. Wolf^{a,b}, Karen S. Mitchell^{a,b}, Naomi Sadeh^{a,b}, Christina Hein^{a,b}, Isaac Fuhrman^c, Robert H. Pietrzak^{d,e}, and Mark W. Miller^{a,b}

^aNational Center for PTSD at VA Boston Healthcare System, Boston MA, USA

^bBoston University School of Medicine, Department of Psychiatry, Boston, MA, USA

^cBoston VA Research Institute, Boston, MA, USA

^dNational Center for PTSD at VA Connecticut Healthcare System, New Haven, CT, USA

^eYale University School of Medicine, Department of Psychiatry, New Haven, CT, USA

Abstract

The fifth edition of the *Diagnostic and Statistical Manual (DSM-5)* includes a dissociative subtype of posttraumatic stress disorder (PTSD), but no existing measures specifically assess it. This paper describes the initial evaluation of a 15-item self-report measure of the subtype called the Dissociative Subtype of PTSD Scale (DSPS) in an on-line survey of 697 trauma-exposed military veterans representative of the US veteran population. Exploratory factor analyses of the lifetime DSPS items supported the intended structure of the measure consisting of three factors reflecting derealization/depersonalization, loss of awareness, and psychogenic amnesia. Consistent with prior research, latent profile analyses assigned 8.3% of the sample to a highly dissociative class distinguished by pronounced symptoms of derealization and depersonalization. Overall, results provide initial psychometric support for the lifetime DSPS scales; additional research in clinical and community samples is needed to further validate the measure.

Keywords

dissociative subtype; PTSD; psychometric; latent profile analysis

The Dissociative Subtype of PTSD Scale (DSPS): Initial Evaluation in a National Sample of Trauma-Exposed Veterans

The 5th edition of the *Diagnostic and Statistical Manual (DSM-5)*, American Psychiatric Association [APA], 2013) contains revised diagnostic criteria for posttraumatic stress disorder (PTSD), including a new subtype defined primarily by marked symptoms of derealization and depersonalization. Delineation of the subtype in the *DSM-5* will likely

influence future research on the etiology, course, and treatment of PTSD, and may promote greater consistency in the measurement and conceptualization of the role of dissociation in PTSD. However, research in this area is limited by the absence of measures specifically designed to assess the dissociative subtype of PTSD. The aim of this study was to address this gap by developing the Dissociative Subtype of PTSD Scale (DSPS).

The introduction of the dissociative subtype of PTSD in *DSM-5* was based in part on a series of psychometric studies which found that 15–30% of individuals with current or past-year PTSD endorsed marked symptoms of derealization and depersonalization which distinguished them from other individuals with PTSD. Wolf, Miller, and colleagues (2012) performed latent profile analyses on the 17 core symptoms of *DSM-IV* (APA, 1994) PTSD plus three additional dissociation items as indexed by the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995) in a sample of trauma-exposed veterans and their trauma-exposed partners. Analyses revealed the presence of a low symptom severity class, a high PTSD symptom severity class (without dissociation), and a high PTSD symptom severity class with co-occurring symptoms of derealization and depersonalization. The severity of dissociative flashbacks (*DSM-IV* PTSD Criterion B3) was greatest among those with the dissociative subtype, and there was also a statistical trend toward more severe psychogenic amnesia (*DSM-IV* PTSD Criterion C3) in this group. The dissociative class comprised approximately 15% of those with PTSD and 6% of the full trauma-exposed sample.

This general pattern of findings was subsequently replicated in several other studies, with dissociative subtype prevalence estimates ranging from 12–30% across samples (Armour, Elklit, Lauterbach, & Elhai, 2014; Armour, Karstoft, & Richardson, 2014; Blevins, Weathers, & Witte, 2014; Steuwe, Lanius, & Frewen, 2012; Wolf, Lunney et al., 2012). In addition, Stein and colleagues (2013), used cut-points on items assessing derealization and depersonalization administered to over 25,000 participants from across 16 different countries, and found that approximately 14% of those with past-year PTSD met presumptive criteria for the subtype. Results of that study also showed that both flashbacks and psychogenic amnesia were associated with the subtype. Together, these studies suggest that a small and unique group of individuals with PTSD show markedly elevated symptoms of dissociation and provide preliminary support for the concept of the dissociative subtype as outlined in *DSM-5*. However, previous investigations were limited by reliance on measures that predated the formal introduction of the dissociative subtype of PTSD in *DSM-5* and offered limited coverage of the construct, specifically: (a) the three dissociation items on the CAPS (Blake et al., 1995; in Armour, Karstoft et al., 2014; Steuwe et al., 2012; Wolf, Lunney et al., 2012; and Wolf, Miller et al., 2012); (b) four items indexing derealization and depersonalization from the self-report Trauma Symptom Inventory (Briere, 1995; in Wolf, Lunney et al., 2012); (c) three items from the Trauma Symptom Checklist (Briere & Runtz, 1989; in Armour, Elklit et al., 2014); (d) ten items from the Multiscale Dissociation Inventory (Briere, 2012; in Blevins et al., 2014); and (e) three interview items from the World Health Organization Composite International Diagnostic Interview (CIDI; Kessler & Üstün, 2004; in Stein et al., 2013). Furthermore, prior studies have not addressed the relevance of other forms of dissociation to the dissociative subtype. This is an important question, because dissociation has traditionally been conceptualized as reflecting a broader range of aberrant and disintegrated perceptual, cognitive, and emotional experiences,

including derealization, depersonalization, dissociated identity, fugue states, memory disturbances, and alterations in the perception of surroundings (Spiegel & Cardeña, 1991).

Existing Measures of Dissociation

As reviewed by Giesbrecht, Lynn, Lilienfeld, and Merckelbach (2008), the most widely-used measure of dissociation to date—the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986)—has been criticized for showing questionable discriminant validity relative to normal-range (i.e., non-pathological) traits such as fantasy proneness (e.g., reflecting a tendency towards day-dreaming and imagination) and absorption (e.g., the capacity to be fully engaged in sensory or cognitive experiences), with some items evidencing structural associations with absorption (Carleton, Abrams, & Asmundson, 2010). Underscoring this concern, Carleton and colleagues (2010) suggested that absorption reflected the capacity to narrowly focus attention on selected stimuli and that this was the antithesis of dissociation, which is characterized by disorganized and insufficient attention to present surroundings. These findings raised questions about the appropriateness of the DES for assessing the dissociative subtype of PTSD. Subsequent efforts were made to address concerns about the construct validity of the DES, through development of a revised scale designed to have specificity to “pathological” forms of dissociation: the DES-Taxon (DES-T; Waller et al., 1996), which includes items assessing derealization, depersonalization, and amnesia. However, critics have expressed doubts about the extent to which this aim was achieved, as scores on the revised scale are still strongly related to trait absorption, and assignment of individuals to the taxon is not reliable (Giesbrecht, Geraerts, & Merckelbach, 2007; Watson, 2003).

Another criticism that has been raised about the DES is that the response options on the scale are difficult to interpret (Wright & Loftus, 1999). Items on the original version of the measure assessed how often each of 28 symptoms were experienced on a visual analogue scale from 0 – 100%; a slightly revised version of the measure (DES-II) dropped the visual analogue scale in favor of listed response options from 0 – 100% (“Never” to “Always”) in 10% increments (Carlson & Putnam, 1993). Because dissociative symptoms occur rarely in the population, this scaling tends to yield floor effects and also raises questions about the meaning and distinction of scores (e.g., is the difference between experiencing a symptom 70 versus 80% of the time the same as that between 0 versus 10%; Wright & Loftus, 1999). The DES has been a useful tool for the study of dissociation. It has been translated into many languages, and has stimulated empirical approaches to the study of this challenging construct; however, its suitability for the assessment of the newly defined dissociative subtype of PTSD is unclear.

The Multiscale Dissociation Inventory (Briere, 2002) addresses some of the limitations of the DES by including response options reflecting how often the symptom was experienced in the past month on a 5-point anchored scale (from “Never” to “Very often”), but it does not assess symptom intensity or severity. Other commonly employed dissociation instruments are specific to one form of dissociation (e.g., the Cambridge Depersonalization Scale; Sierra & Berrios, 2000), embedded in much longer inventories (e.g., the Dissociation scale on the Trauma Symptom Inventory; Briere, 1995), or were specifically developed for the

assessment of *DSM* dissociative disorder diagnoses (e.g., the Structured Clinical Interview for DSM-IV Dissociative Disorders; Steinberg, 1994). In sum, no existing scale of dissociation is well-matched for the assessment of the *DSM-5*-defined dissociative subtype of PTSD, and this prompted us to develop a new measure.

Aims and Hypotheses

Our goal in developing the DSPS was to create a measure that would capture a broad range of severe forms of dissociation, including derealization, depersonalization, loss of awareness of present surroundings, loss of time (e.g., fugue states in which an individual does not remember traveling to a destination or what occurred during the course of a day), and amnesia for trauma memories, which have long been conceptualized as key components of dissociation (Spiegel & Cardeña, 1991). In so doing, we aimed to test which aspects of dissociation are most strongly related to the PTSD subtype, as this has not yet been comprehensively investigated. We also aimed to develop a measure that would be distinct from the normal-range trait of absorption. We included multiple items for each type of dissociation in order to provide better coverage of each content domain and included an assessment of both lifetime and current symptoms.

The specific aims of this study were to examine the psychometric properties of the DSPS by evaluating: (1) the reliability and factor structure of the measure; (2) its discriminant validity from absorption; and (3) its ability to identify a latent class of veterans who were uniquely dissociative, consistent with prior work on the subtype. Exploratory factor analyses (EFA) were used to examine the structure of the measure. Based on prior research (Briere, Weathers, & Runtz, 2005; Ross, Ellason, & Anderson, 1995; Stockdale, Gridley, Balogh, & Holtgraves, 2002), we expected to find support for a three factor structure reflecting derealization and depersonalization, psychogenic amnesia, and more general reductions in awareness and memory disturbances. We also hypothesized that the DSPS would show discrimination from a measure of absorption, as evidenced by weak and/or non-significant correlations with an index of absorption. Finally, we expected that the depersonalization and derealization DSPS items would be the strongest indicators of the subtype.

Method

Procedure

Data were collected by the survey research firm GfK Knowledge Networks, Inc. using an online research panel (KnowledgePanel), which is designed to be demographically representative of the US population. The panel includes over 80,000 households and was developed using address-based sampling methods; this approach improves on random-digit dialing sampling methods because it reaches households in which there is no home phone. The sample included households without Internet access, which were provided with Internet access and hardware. The sample is representative of approximately 98% of the U.S. population. After enrollment in the panel, potential participants are recruited to specific web-based studies via email and are e-mailed a reminder if they have not responded to the survey in three days. GfK Knowledge Networks provides incentives for study completion, including points that can be redeemed for prizes, cash rewards, and raffles. This study resampled a

subset ($n = 2,715$) of the 3,157 veterans who participated in a previous survey (i.e., the National Health and Resilience in Veterans Study; NHRVS, Pietrzak & Cook, 2013) and who endorsed trauma exposure on the Trauma History Screen (Carlson et al., 2011) as part of that original survey. A number of recent studies have characterized the veterans who took part in the NHRVS (Klingensmith et al., 2014; Tsai et al., 2014; Wisco et al., 2014). The sample is representative of the US military veteran population. Of this group of trauma-exposed veterans, 1,126 were randomly selected and invited to take part in this study; 860 completed the survey (76.4% response rate). Post-stratification weights were created to match veterans in the broader survey panel, which was matched to the October, 2010 U.S. population Census data; weights were applied in the data analyses where indicated below. The census data aligns well with veteran population estimates (Wisco et al., 2015). The survey assessed an array of psychological symptoms, only a subset of which are the focus of this study. The entire survey took, on average, 36.5 minutes ($SD: 17.7$) to complete and participants were awarded 50,000 points (approximately \$50) for the time and effort they devoted to completing the survey. The survey was available on-line for approximately two weeks. Measure order was randomized with the exception that The National Stressful Events Survey (NSES, to assess trauma exposure and PTSD, see below) immediately preceded the DSPTS given that the latter referred to the participant's self-identified "worst" traumatic experience as determined by the NSES. Where indicated (see below), item order within a measure was also randomized. The local IRB reviewed and approved this study.

Participants

Of the 860 veterans who completed this study, the vast majority was male (91.5%) and reported their race and ethnicity as White, non-Hispanic (83.8%). The race and ethnicity of the remainder of the sample was as follows: 5.3% reported Hispanic ethnicity, 5.2% Black, 3.5% mixed race, and 2.1% identified as 'other' race. Veterans ranged in age from 22 to 96 ($M = 63.0$; $SD: 12.3$) and the majority was married/cohabitating (80.0%). Participants were drawn from across the United States: 39.7% of respondents were located in the South, 26.2% in the West 23.4% in the Midwest, and 10.8% in the Northeast. Of those participants who reported one or more deployments (34.3%; $n = 295$), 65.6% reported involvement in the Vietnam War, 10.5% in the Korean War, 9.5% in the Persian Gulf War, 4.6% in the Iraq/Afghanistan, 2.6% in World War II, and 5.6% in another war/conflict.

Participants reported on their exposure to 16 different types of traumatic experiences on the NSES (Kilpatrick, Resnick, Baber, Guille, & Gros, 2011) and then self-identified their "worst" traumatic experience from this list. They were instructed to respond to the NSES PTSD assessment and to two psychogenic amnesia items on the DSPTS in reference to this event. Index traumatic events included: sudden and unexpected death of a close friend or family member due to heart attack, stroke, or cancer (17.1%), combat exposure (13.8%), seeing dead bodies or body parts (7.6%), sudden death of a friend or loved one due to accident or suicide (7.0%), and sexual or physical assault (5.6%). Other index traumas were reported by fewer than 5% of the sample and are not detailed here. Participants reported exposure to a range of traumatic experiences, which occurred prior to their military service (26.9%; range: 0–13, $M = 2.44$, $SD = 3.47$), during their military service (44.7%; range: 0–4, $M = .59$, $SD = .77$), and/or after their military service (33.5%; range: 0–13, $M = 1.12$, SD

= 2.06). On average, participants reported exposure to 2.44 different traumatic events across these time frames (range: 0–30; *SD*: 3.47).

Of the 860 participants, we omitted 163 from these analyses leaving a total sample of 697: 142 were omitted because they completed the survey either so quickly (< 15 minutes; $n = 6$) or so slowly (> 2 hours, $n = 136$), that it raised doubt about the validity of their assessments, and 23 were eliminated because they achieved a *T* score of 90 or greater (Goodwin, Sellbom, & Arbisi, 2013) on an index of symptom over-reporting (the revised Infrequency Psychopathology [Fp-r] validity scale on the Minnesota Multiphasic Personality Inventory-2 Restructured Form [MMPI-2-RF; Tellegen & Ben-Porath, 2008]), which was administered to address concerns about the lack of experimenter control inherent in internet-based methods. These items were administered in random order along with a subset of other MMPI-2 items (for a total of 51 MMPI-2 items) that are not the focus of this investigation. Two participants were omitted from analyses because they achieved an Fp-r *T* score of 90 or greater and took over 2 hours to complete the survey, leaving a final sample size of 697 for these analyses. Individuals excluded from analyses had significantly higher mean scores on lifetime *DSM-5* total NSES PTSD severity ($M = 26.44$, $SD = 12.62$) and on total lifetime dissociation, as measured by the DSPS ($M = 1.28$, $SD = 1.42$) compared to those who were included in analyses ([PTSD: $M = 23.45$, $SD = 7.59$; $t(855) = 3.9$, $p < .001$, $d = .32$], [dissociation: $M = .96$, $SD = .90$; $t(858) = 3.6$, $p < .001$, $d = .27$]); no other significant group differences emerged across demographic variables including sex, race, or age.

Measures

The National Stressful Events Survey (NSES)—The NSES (Kilpatrick, Resnick, Baber, Guille, & Gros, 2011) is a self-report measure that assesses exposure to traumatic events, and the presence and severity of lifetime and current *DSM-5* PTSD symptoms. For each *DSM-5* PTSD criterion, the first part of the item assessed whether the individual had ever experienced the symptom in his or her lifetime (yes/no). For each symptom that was endorsed, the time that the symptom was last experienced was then assessed on a 3-point scale (“within the past month,” “more than 1 month ago but less than 1 year ago, or “1 or more years ago”). If the participant reported the symptom’s presence within the past month, the extent to which the participant was “bothered” by the symptom in the past month was rated in a follow-up item on a scale of 1 (“Not at all) to 5 (“Extremely”). For symptoms not directly indexed to the Criterion A traumatic event (*DSM-5* PTSD Criteria D3 through E6), an additional follow-up dichotomous (yes/no) item assessed if the symptom “began or got worse after” experiencing the stressor; affirmative endorsement of this follow-up question was required for the symptom to contribute to a diagnosis. In order to receive a possible PTSD diagnosis per this self-report measure, participants also had to endorse symptoms per the *DSM-5* scoring algorithm and report significant distress or impairment by affirmatively responding to at least one of four items assessing psychological distress and functional impairment. Total severity scores on the NSES have been shown to correlate strongly with an established self-report measure of *DSM-IV* PTSD (Miller et al., 2013). Because of the low prevalence of possible current (past month) PTSD in this sample (see below), we examined only the dichotomous lifetime PTSD symptoms. Cronbach’s Coefficient alpha for the full NSES lifetime PTSD scale was $\alpha = .90$.

Dissociative Subtype of PTSD Scale (DSPS)—As described above, the DSPS is a new 15-item self-report measure of dissociative symptoms and the focus of this investigation. Item content was generated by the first author in consultation with the last author with the aim of covering multiple types of dissociative symptomatology (Spiegel & Cardena, 1991). The measure was developed to be administered after the identification of the participant's "worst" traumatic experience, as some items (14–15) reference the participant's self-identified worst trauma. This was accomplished in this study using a routing structure which inserted the participant's self-reported worst traumatic experience as identified on the NSES into the prompt for items 14 and 15 (see Table 1). The structure of the DSPS is similar to the NSES in that the measure assesses both lifetime and current (past month) symptoms. It also assesses the frequency and intensity of symptoms that occurred in the past month, as symptoms might fluctuate differentially on these dimensions such that, for example, an individual might experience mild derealization on a daily basis (i.e., without losing connection to the present) or, in contrast, might experience derealization on an infrequent basis but lose all connection to the present moment for an extended period of time.

Verbatim item content is listed in Table 1 (subsequent tables and the text abbreviate the item content for brevity). Each item began with a "stem" prompt, which asked if the respondent had ever experienced the symptom (yes/no). If the initial response was positive, a follow-up item ascertained if the individual had experienced the symptom in the past month (yes/no). If the response to this item was positive, two additional sub-items were then presented: the first assessed the frequency of the symptom in the past month on a 4-point scale (response options: "once or twice," "once or twice a week," "three or four times a week," and "daily or almost every day in the past month" and the second assessed the intensity of the symptom in the past month on a 5-point scale (response options: "not very strong," "somewhat strong," "moderately strong," "very strong," and "extremely strong"). Lifetime items did not include these frequency and intensity scales in order to limit the time required to complete the measure and reduce overall participant burden. For one item assessing reductions in awareness (i.e., feeling as if in a daze or fog), the item prompt included instructions that the respondent should not rate the item if the symptom only occurred in the context of substance or medication use that induced drowsiness or in other instances of extreme fatigue. Given that we focused on lifetime PTSD symptoms (see above), we examined only the dichotomous lifetime DSPS items. Alpha coefficients for this measure are provided below. The DSPS is available from the first author.

Multidimensional Personality Questionnaire, Brief Form (MPQ-BF), Absorption Scale—We administered the Absorption scale from the MPQ-BF (Patrick, Curtin, & Tellegen, 2002) in order to test the discriminant validity of the DSPS from this normal-range trait. The Absorption scale consists of 12 true/false items that assess the capacity to be uniquely focused and absorbed in sensory stimuli and activities, both cognitively and emotionally. The scale also indexes tendencies towards altered mental states, imaginative experiences, and "self-altering" experiences, including those of a religious nature. The scale was originally developed as an index of hypnotizability. Cronbach's alpha coefficient in this

sample was $\alpha = .76$. As only the Absorption scale was administered from the MPQ-BF, we randomized the item order of the 12 items.

Data Analyses

First, we calculated the raw and weighted prevalence of possible current and lifetime PTSD, per the NSES self-report data. This scoring algorithm followed the *DSM-5* definition of the disorder and required the presence of at least 1 PTSD Criterion B symptom, 1 Criterion C symptom, 2 Criterion D symptoms, and 2 Criterion E symptoms (at a symptom severity rating of “moderate” or higher for current symptoms); consistent with prior work with the NSES (Miller et al., 2013), the algorithm also required that the participant endorse significant distress or impairment as a result of the PTSD symptoms (i.e., *DSM-5* PTSD Criterion F) and that non-trauma specific symptoms (e.g., PTSD Criteria D and E) began or became worse following trauma-exposure. We then estimated the raw and weighted frequency of endorsement of each of the dichotomous lifetime symptoms on the DSPS (using survey procedures in SAS 9.3). Second, we conducted an exploratory factor analysis of raw scale items to determine the common factors underlying the measure. We chose the best class solution based on the scree plot, the pattern of item loadings, and the χ^2 difference test, which tests if a nested, more parsimonious, model with fewer free parameters is associated with degraded fit compared to a parent model with more free parameters (e.g., a two versus three factor EFA model, respectively). Third, we tested how scores on the scales identified in the EFA correlated with our measure of absorption. Fourth, we conducted a latent profile analysis (LPA) using mean scores on the items contributing to each PTSD symptom cluster as defined in the *DSM-5* (i.e., intrusions, avoidance, negative cognitions and mood, and arousal and reactivity) and on the items contributing to the factors identified in the exploratory factor analysis. We did this to determine if the DSPS could identify a discrete subset of individuals with marked dissociative symptoms, consistent with prior work on this subtype of PTSD. We used ANOVA (in SPSS) to compare the pattern of mean scores on the indicators submitted to the LPA as a function of latent class (with a Bonferroni correction of .007 to guard against family-wise error) and compared the latent classes on a variety of indices including PTSD diagnosis, trauma history, and demographics using χ^2 and tests of mean difference, as appropriate.

Factor analyses were evaluated using the standard fit indices (e.g., root mean square error of approximation, confirmatory fit index, Tucker-Lewis index, standardized root mean square residual) using the criteria outlined by Hu and Bentler (1999). Latent class models were compared with the Bayesian information criterion (BIC; smaller values are preferred; Schwartz, 1978), the bootstrap likelihood ratio test (BLRT), and the Lo-Mendell-Rubin-adjusted likelihood ratio test (LMRA; Lo, Mendell, & Rubin, 2001). With these latter two statistics, a significant *p*-value indicates that the class model under evaluation is preferred over a model with one fewer classes. Classes were also compared on entropy values (an index of class discrimination) and on their size and interpretability. Classes containing fewer than 5% of the sample were rejected based on concerns about the representativeness of such classes and the likelihood that this was an indication that the model had extracted too many classes (Nylund, Asparouhov, & Muthén, 2007; McLachlan & Peel, 2000). All latent variable analyses were conducted with the Mplus 7.11 statistical modeling software (Muthén

& Muthén, 2012). The mean and variance adjusted weighted least squares (WLSMV) estimator was used in the factor analysis, given the use of dichotomous indicators, and the robust maximum likelihood (MLR) estimator was used for the LPA, as this is standard for this type of analysis. All multivariate analyses incorporated missing data directly under the standard procedures for WLSMV and direct maximum likelihood estimation. The maximum amount of item-level missing data was 1.9%. Univariate analyses by latent class assignment were conducted in SPSS based on the sample with complete data ($n = 688$).

Results

Prevalence estimates

Using the *DSM-5* scoring algorithm, the prevalence of possible lifetime PTSD per self-report assessment in the sample was 13.1% (weighted estimate: 14.4%) and the prevalence of possible current (past-month) PTSD was 2.0% (weighted estimate: 1.8%). The lifetime dissociation items were endorsed by 4.2% to 17.4% of participants (see Table 1). Dissociation items were more frequently endorsed by those with possible lifetime PTSD as compared to those without; all χ^2 statistics were significant at the $p < .001$ level and exceeded a Bonferroni correction for family-wise error of $p < .003$ (see Table 1 for estimates of effect size, Φ).

Factor Analyses and Associations of the DSPS Factor Analytically-Derived Subscales

We investigated the fit of exploratory factor models with solutions ranging from 1 to 4 factors. The scree plot suggested 3 or 4 factors, and the χ^2 difference tests suggested that each successive model provided better fit than a model with one less factor (see Table 2). Evaluation of the pattern of factor loadings, however, clearly suggested that the three-factor model was more interpretable than the four-factor one: the four-factor solution included a factor that had only one item (item 3: out of body) with its strongest loading on that factor and this item loaded significantly with other derealization and depersonalization items in the three-factor solution. The factors that emerged in the three-factor solution also closely approximated the hypothesized structure of the DSPS. Specifically, Factor 1 indexed derealization and depersonalization, Factor 2 indexed a more general loss of awareness of surroundings, and Factor 3 indexed psychogenic amnesia (see Table 2). In this solution, there was one instance in which an item intended to measure derealization (item 12: the world seems like a movie) evidenced its strongest association with the loss of awareness factor (Factor 2; $\beta = .51, p < .05$), however, this item also showed a statistically significant loading of a similar magnitude on Factor 1 ($\beta = .40, p < .05$); therefore, this item was used to index the derealization/depersonalization subscale for all subsequent analyses. In addition, item 8 (the world does not seem real) showed equivalent and significant loadings on Factor 1 ($\beta = .49, p < .05$) and Factor 2 ($\beta = .47, p < .05$). Given that it was intended to be an indicator of derealization, this item was retained on Factor 1 in subsequent analyses. Internal reliability (Cronbach's alpha coefficient) for each factor analytically-derived lifetime subscale on the DSPS was as follows: $\alpha = .79$ for the seven-item derealization/depersonalization subscale, $\alpha = .79$ for the six-item loss of awareness subscale, and $\alpha = .74$ for the two-item psychogenic amnesia subscale. Alpha for the 15 lifetime items together was $\alpha = .85$. Mean summary scores on each lifetime subscale were: .52 ($SD = 1.21$) for the

derealization/depersonalization subscale; .87 ($SD = 1.46$) for the loss of awareness subscale; and .31 ($SD = .65$) for the psychogenic amnesia subscale. The mean summary score across all lifetime items was 1.70 ($SD = 2.67$, range = 0 – 15).

The pattern of correlations between the DSPS subscales and the MPQ-BF Absorption scale suggested discrimination between the subscales and this normal-range trait with the subscales evidencing small to medium sized associations with Absorption (per the Cohen, 1988 definitions wherein $r = .10$, $.30$, and $.50$ are used as benchmarks for small, medium, and large effects, respectively). Specifically, Absorption correlated with the Derealization/Depersonalization subscale at $r = .38$ ($p < .001$), with the Loss of Awareness subscale at $r = .35$ ($p < .001$), and with the Psychogenic Amnesia subscale at $r = .17$ ($p < .001$). In other words, the maximum amount of shared variance between MPQ Absorption and any DSPS subscale was 14.4%. Associations between these three DSPS scales and total lifetime PTSD severity were $r = .44$, $.46$, and $.42$ (all $p < .001$), respectively.¹

Latent Profile Analyses

We next calculated mean scores on the items contributing to the four *DSM-5* PTSD symptom clusters and the three subscales of the DSPS, as determined through the EFA, and used these seven mean scores as indicators in a LPA. We compared the fit of solutions with 2–5 latent classes. The fit of each model is shown in Table 4. Models with increasing class sizes showed improved fit (lower BIC values and significant BLRT p -values with relatively equivalent and high entropy values indexing good classification), but the five-class model was rejected because the best loglikelihood value was not replicated and because the model yielded two classes comprised of fewer than 5% of the sample. The four-class model was also rejected as it included a small class defined by moderate PTSD symptom severity and relatively greater dissociative symptom severity, but it was not evident that this class differed meaningfully from the high symptom class and this solution was also less parsimonious than the three-class one. Given this, the three-class solution was selected as the best fitting model. Class 1 in this solution comprised 8.3% (weighted estimate: 7.4%) of the participants and showed high mean scores on all the PTSD symptom clusters and the three dissociation subscales; class 2 comprised 18.5% (weighted estimate: 18.5%) of the participants and showed high scores on the PTSD symptom clusters, low scores on the derealization/depersonalization subscale, a moderate elevation on the loss of awareness subscale, and scores on psychogenic amnesia that were equivalent to those in class 1; finally, class 3 comprised 73.3% (weighted estimate: 74.0%) of the sample and evidenced low scores on all indicators submitted to the analysis. Based on this pattern of results, class 1 was identified as the high PTSD/high dissociation class (i.e., the dissociative subtype), class 2 as the high PTSD group (without dissociation), and class 3 as the asymptomatic group. We could not conduct the LPA among only those with possible lifetime PTSD due to the limited sample size. However, based on the analysis in the larger sample of trauma-exposed veterans, 39.6% of those with possible lifetime PTSD were assigned to the dissociative subtype of PTSD.^{2, 3, 4}

¹As psychogenic amnesia was included in both the NSES and DSPS, we re-ran these correlations with this item removed from the NSES total score. Results were near identical to that reported for the full NSES scale (correlation coefficients within .02; details available from first author).

Figure 1 shows the means scores on the indicators in the analysis by latent class. ANOVAs evaluating overall mean score differences on the items submitted to the LPA as a function of latent class were all statistically significant at the $p < .001$ level, which surpassed the Bonferroni p -value threshold of .007 for the omnibus F -test. We conducted Tukey's post-hoc pairwise comparisons and found that all pairwise comparisons yielded statistically significant mean differences (at the $p < .05$ level), with the exception of the difference in mean avoidance symptoms between the dissociative class and the PTSD class ($p = .21$) and the difference in mean psychogenic amnesia symptoms between these same two classes ($p = .83$). Table 5 shows the effect sizes for each of the pairwise comparisons; the dissociative class differed from the PTSD class (and the asymptomatic class) primarily on the basis of mean scores on the derealization/depersonalization subscale, although effect sizes were also large (per Cohen, 1988) for the difference in means across these classes on the loss of awareness subscale. The notion that the dissociative subtype was most heavily influenced by scores on the derealization/depersonalization subscale was also supported by evaluation of the pattern of correlations between the posterior probability scores from the latent class analysis (a dimensional index of the likelihood of membership in each class) and the item mean scores on the DSPS subscales. Specifically, the posterior probability score for class 1 (the dissociative subtype class) evidenced its strongest association with mean scores on the derealization/depersonalization subscale ($r = .84, p < .001$), relative to the mean scores on the loss of awareness subscale ($r = .59, p < .001$) and the psychogenic amnesia subscale ($r = .20, p < .001$); its strongest association with any PTSD subscale was with the arousal symptoms ($r = .44, p < .001$). In contrast, class 2 (the PTSD latent class) was not highly correlated with any of the DSPS subscales (strongest $r = .36, p < .001$, with the psychogenic amnesia subscale), and evidenced its strongest association with the PTSD avoidance symptom cluster ($r = .62, p < .001$). The asymptomatic class was negatively correlated with all the DSPS and PTSD subscales (full correlation matrix available from first author).

We also assessed the extent to which individual PTSD items were differentially endorsed among individuals assigned to the High PTSD versus High PTSD and Dissociation classes so we conducted χ^2 analyses for each of the 20 PTSD NSES items, and given this number of statistical tests, we used a Bonferroni correction to adjust the threshold for statistical significance to $p < .0025$. A number of these comparisons achieved p -values that were less than $p < .05$, the most significant of which was for *DSM-5* Criterion B3 (flashbacks). This item was endorsed by 71.9% of those in the dissociative subtype compared to 49.6% of those in the PTSD group ($\chi^2 [1, n = 182] = 7.95, p = .005$); however, neither this nor any of the other comparisons were significant after correction for multiple testing.

²13.1% of the sample was identified as having possible PTSD on the NSES using the *DSM-5* scoring algorithm but the LCA assigned double that percentage into one of the two high PTSD groups. Given this apparent disagreement, we examined the reasons why an individual assigned to either high PTSD group via LCA failed to meet criteria for possible PTSD according to the *DSM-5* algorithm: of this group, 60.4% failed to meet the *DSM-5* definition of PTSD by one criterion, and 23.1% by two criteria. The most common reason for this discrepancy was due to failure to meet either PTSD Criteria D or E, with just under 50% not meeting one of these criteria.

³The most common index trauma endorsed by the sample was the sudden death of a loved one or friend due to heart attack, stroke, or cancer, and this event may or may not adequately reflect the *DSM-5* definition of trauma as it is unknown if the death was violent or accidental, which is a requirement in the *DSM-5*. Given this, we reran the LCA in the $n = 575$ participants who did not endorse this event as the primary index event. Results were near identical to that reported for the full sample (details available from first author).

⁴As psychogenic amnesia was included in the LPA in both the NSES and DSPS, we re-ran the LPA with this item excluded from the NSES. Doing so, did not alter the LPA results from that reported in the main text (details available from first author).

We next tested for demographic and trauma-history differences between the dissociative versus PTSD classes, and found that the dissociative class was less likely to self-report as Caucasian (68.4% versus 81.6%, respectively, $\chi^2(1, n = 182) = 3.90, p = .048, \Phi = .15$), and on average, was somewhat older than the PTSD class (M_{age} for dissociative class: 61.33 years, $SD = 10.36$, versus M_{age} for PTSD class: 56.90 years, $SD = 13.42$, t for unequal variances $[137.98] = 2.43, p = .016$). There were no significant differences between these two groups as a function of sex, self-reported history of childhood trauma or sexual trauma (at any age), or the number of different types of trauma the participant was exposed to during pre-military, military, or post-military service time frames. The dissociative class was more likely to meet criteria for possible lifetime PTSD per self-report assessment (63.2%) relative to the High PTSD class (44.0%); $\chi^2(1, n = 182) = 5.75, p = .017, \Phi = .18$.

Discussion

This study evaluated the initial psychometric performance of a new self-report measure designed to assess the dissociative subtype of *DSM-5* PTSD. Data were collected using a web-based survey of a sample of trauma-exposed veterans representative of the U.S. veteran population. Analyses evaluated the reliability and structure of the DSPS, and the ability of the measure to classify a unique subgroup of individuals who resemble the dissociative class identified in prior research (e.g., Armour, Elklit et al., 2014; Steuwe et al., 2012; Wolf, Lunney et al., 2012; Wolf, Miller et al., 2012).

Factor analyses revealed a three-factor structure that clearly delineated items reflecting derealization and depersonalization from those reflecting a more general loss of awareness of time and surroundings, and from those assessing psychogenic amnesia for prior trauma. These subscales were not strongly influenced by the common (i.e., normal range) trait of absorption. Items assessing derealization and depersonalization were the strongest indicators of the dissociative subtype, occurring substantively only among those assigned to the subtype (see Figure 1). Individuals assigned to the dissociative subtype also tended to endorse gaps in awareness or loss of time, however endorsement of these symptoms was not specific to the subtype as they also occurred among those assigned to the PTSD class per the LPA. This suggests that although gaps in awareness and loss of time may covary with the dissociative subtype, presence of such dissociative phenomena on their own should not be used as an indication of the subtype, and at present, adding these types of dissociation to the subtype criteria is not warranted. Contrary to some prior studies (Stein et al., 2013; Wolf, Miller et al., 2012), we found no evidence that psychogenic amnesia covaried with subtype membership, as it was nearly equally endorsed among individuals with high PTSD symptoms with and without the subtype. This was the case both when psychogenic amnesia was assessed with the NSES as part of the *DSM-5* PTSD assessment and when this phenomenon was assessed in the two DSPS items reflecting this symptom. Furthermore, this pattern of association was unchanged when the psychogenic amnesia item was removed from the NSES and the analyses rerun. Wolf, Lunney and colleagues (2012) also found no unique association between psychogenic amnesia and subtype membership in two separate samples. Thus, given the equivocal pattern of results across studies, further research is needed to determine if, and under what circumstances, psychogenic amnesia may be associated with the subtype. It is conceivable that subtype membership is more strongly

associated with distortions in real-time perceptual, sensory, and cognitive organization and integration than with deficits in long-term personal memory. It is also plausible that items thought to index psychogenic amnesia are not unique to psychologically-motivated forgetting and may be endorsed by individuals with organic amnesic symptoms or other memory problems. Together, the pattern of results suggests that the derealization/ depersonalization subscale of the DSPS has the potential to identify individuals with the subtype, but that the other subscales on the measure should not be used for this purpose. Rather, scores on the psychogenic amnesia and loss of awareness subscales may provide useful supplemental information about current symptoms. Additional work in clinical samples is required to fully test the utility of the DSPS.

Approximately 8% of the trauma-exposed veterans in this sample were classified in the LPA into the lifetime high PTSD & dissociation class, which is similar to the 6% reported by Wolf, Miller et al. (2012) in a sample of trauma-exposed veterans and partners. Nearly 40% of those with possible lifetime PTSD were included in the subtype, in contrast to prior research estimating the prevalence of the subtype at 15–30% of those with current PTSD (Armour, Elklit et al., 2014; Steuwe et al., 2012; Wolf, Lunney et al., 2012; Wolf, Miller et al., 2012). The source of this difference in prevalence estimates is not clear. One possibility is that it has to do with our focus on lifetime PTSD and lifetime dissociation as the majority of prior studies have focused on current (e.g., past month or past-year) symptom assessments. The prevalence of lifetime symptoms would be expected to be higher than that for current symptoms. A second possibility is that the estimate reflects measurement error in our assessment of lifetime PTSD diagnostic status, as this was based on a self-report measure of dichotomous items collected via web-based methods, which may negatively impact the internal validity of the symptom assessment. Third, this difference may reflect error or lack of specificity in the DSPS itself. However, we suspect that the greater prevalence estimate in this study may have more to do with the measurement of possible PTSD diagnosis and the focus on lifetime PTSD than it does with the assessment of dissociation, because the estimate of the subtype in the full trauma-exposed sample was similar to that reported in previous studies. This issue also requires further research in samples that are assessed for both current and lifetime symptoms using gold-standard structured diagnostic interviews.

Limitations

Results of this study should be interpreted in light of several limitations. First, we did not analyze the current (past month) items because of the low prevalence of possible current *DSM-5* PTSD and infrequent endorsement of current dissociative symptoms, which would consequently limit generalizability of results. Future work testing the measure in clinical samples, where the prevalence of such symptoms is likely to be greater, is required to comprehensively evaluate the current (frequency and intensity) and lifetime scales and to determine their clinical utility for the reference population.

Second, we did not administer a structured diagnostic interview of dissociation to use as a criterion variable for the DSPS, nor was our assessment of PTSD based on a diagnostic interview. This is important because the web-based self-report methodology employed here

is not as methodologically rigorous as that of the gold-standard assessment approach (i.e., structured interviews). Given the inclusion of the subtype in the newly released *DSM-5* and the need for measures to reliably assess it, we prioritized the speed and efficiency associated with a self-report web-based methodology (and the large sample size this can achieve) over clinical interviewing.

Third, our use of a web-based methodology afforded less control (i.e., internal validity) over the administration of the measures relative to an in-person approach. Nevertheless, we made efforts to mitigate this by conservatively eliminating participants who showed evidence of an invalid style of responding. A related point is that we did not administer the full MMPI-2 RF due to time constraints and instead included select scales with item order randomized; it is unclear how doing so might have affected the ability of Fp-r to accurately identify invalid response profiles.

Fourth, we did not examine the test-retest reliability of the measure, nor did we conduct a comprehensive examination of the construct validity of the DSPS. It is possible that symptoms or problems other than dissociation may have influenced responses to the measure. For example, cognitive errors associated with advancing age or traumatic brain injury (e.g., memory loss) or substance misuse could conceivably result in symptoms similar to those included on the DSPS; these areas are important for future research. Along these lines, we have already revised the measure to expand instructions to rule out the role of substances and extreme fatigue for all items on the measure.

Fifth, the measure does not assess whether dissociative symptoms began or got worse during or following trauma exposure; thus it is possible that some symptoms pre-dated trauma exposure. The *DSM-5* subtype criteria, however, do not specify that dissociative symptoms must be temporally linked to trauma exposure; this represents an additional area for further study.

Sixth, the results of latent variable analyses are specific to the variables submitted to the analysis, and it is possible that findings would differ if we had included additional indicators of psychiatric disturbance (e.g., comorbid symptoms) in the models. That said, our aim was to test existing models of the association between PTSD and dissociation, and the evaluation of the structure of dissociation with other psychiatric comorbidity is outside the scope of this study.

Finally, the sample was comprised primarily of older male veterans, and while representative of the broader veteran population, this limits the generalizability of the results to this group and precludes us from examining possible demographic moderators (e.g., sex) of DSPS item endorsement and of the results more generally; cross-validation of the DSPS in both clinical and community samples, that include a broader range of ages and greater representation of women, is necessary to examine the replicability of these results and to further test the psychometric performance and clinical utility of the measure.

Conclusions

To our knowledge, there are no published reports of measures designed specifically to assess the dissociative subtype of PTSD. Existing dissociation inventories do not comprehensively assess both lifetime and current symptomatology or distinguish between symptom frequency versus intensity. The DSPS addresses this gap in the literature and also speaks to fundamental questions about the types of dissociation that are associated with this subtype of PTSD. Results from this nationally-representative sample of trauma-exposed veterans yield initial support for the use of the DSPS lifetime items for the assessment of the dissociative subtype of PTSD and suggest that the subtype is best indicated by symptoms of derealization and depersonalization. Further work is needed to test the replicability of the DSPS factor structure, its ability to identify individuals with the subtype, and the utility of the measure in clinical (i.e., PTSD) and community samples. These data reflect an important first step in developing tools to assess the dissociative subtype of PTSD with the ultimate aim of allowing for the study of the etiology, course, and treatment of individuals with this presentation of PTSD.

Acknowledgments

This research was funded by the National Center for PTSD, a Career Development Award to Erika J. Wolf from the United States (U.S.) Department of Veterans Affairs, Clinical Sciences Research and Development Program, an award from the University of Minnesota Press, Test Division to Erika J. Wolf, and a U.S. Department of Veterans Affairs Clinical Sciences Research and Development Program Merit Review Award (5I01CX000431-02) to Mark Miller. Karen S. Mitchell's contribution to this work was supported by K01MH093750. The contents of this manuscript do not represent the views of the U.S. Department of Veterans Affairs or the United States Government.

References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed.. Washington, DC: Author; 1994.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed.. Arlington, VA: Author; 2013.
- Armour C, Elklit A, Lauterbach D, Elhai J. The DSM-5 dissociative-PTSD subtype: Can levels of depression, anxiety, hostility, and sleeping difficulties differentiate between dissociative-PTSD and PTSD in rape victims? *Journal of Anxiety Disorders*. 2014; 28:418–426. [PubMed: 24568742]
- Armour C, Karstoft KI, Richardson JD. The co-occurrence of PTSD and dissociation: Differentiating severe PTSD from dissociative PTSD. *Social Psychiatry and Psychiatric Epidemiology*. 2014; 49:1297–1306. [PubMed: 24445579]
- Bernstein EM, Putnam FW. Development, reliability, and validity of a dissociation scale. *Journal of Nervous & Mental Disease*. 1986; 174:727–735. [PubMed: 3783140]
- Blake DD, Weathers FW, Nagy LM, Kaloupek DG, Gusman FD, Charney DS, Keane TM. The development of a clinician-administered PTSD scale. *Journal of Trauma Stress*. 1995; 8:75–90.
- Blevins CA, Weathers FW, Witte TK. Dissociation and posttraumatic stress disorder: A latent profile analysis. *Journal of Traumatic Stress*. 2014; 27:388–396. [PubMed: 25069601]
- Briere, J. *Trauma Symptom Inventory Professional Manual*. Odessa, FL: Psychological Assessment Resources; 1995.
- Briere, J. *Multiscale Dissociation Inventory*. Odessa (FL): Psychological Assessment Resources; 2002.
- Briere J, Runtz M. The trauma symptom checklist (TSC-33): Early data on a new scale. *Journal of Interpersonal Violence*. 1989; 4:151–163.
- Briere J, Weathers FW, Runtz M. Is dissociation a multidimensional construct? Data from the Multiscale Dissociation Inventory. *Journal of Traumatic Stress*. 2005; 18:221–231. [PubMed: 16281216]

- Carleton RN, Abrams MP, Asmundson GJ. The Attentional Resource Allocation Scale (ARAS): Psychometric properties of a composite measure for dissociation and absorption. *Depression & Anxiety*. 2010; 27:775–786. [PubMed: 20186969]
- Carlson EB, Putnam FW. An update on the dissociative experiences scale. *Dissociation*. 1993; 6:16–27.
- Carlson EB, Smith S, Palmieri P, Dalenberg C, Ruzek JI, Kimerling R, Spain DA. Development and validation of a brief self-report measure of trauma exposure: The Trauma History Screen. *Psychological Assessment*. 2011; 23:463–477. [PubMed: 21517189]
- Cohen, J. Statistical power analysis for the behavioral sciences. Hillsdale, New Jersey: Lawrence Erlbaum Associates; 1988.
- Giesbrecht T, Geraerts E, Merckelbach H. Dissociation, memory commission errors, and heightened autonomic reactivity. *Psychiatry Research*. 2007; 150:277–285. [PubMed: 17324470]
- Giesbrecht T, Lynn S, Lilienfeld SO, Merckelbach H. Cognitive processes in dissociation: an analysis of core theoretical assumptions. *Psychological Bulletin*. 2008; 134:617–647. [PubMed: 18729565]
- Goodwin BE, Sellbom M, Arbisi PA. Posttraumatic stress disorder in veterans: The utility of the MMPI-2-RF validity scales in detecting overreported symptoms. *Psychological Assessment*. 2013; 25:671–678. [PubMed: 23544394]
- Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*. 1999; 6:1–55.
- Kessler RC, Üstün TB. The World Mental Health (WMH) survey initiative version of the World Health Organization Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research*. 2004; 13:93–121. [PubMed: 15297906]
- Kilpatrick, DG., Resnick, HS., Baber, B., Guille, C., Gros, K. The National Stressful Events Web Survey (NSES-W). Charleston, SC: Medical University of South Carolina; 2011.
- Klingensmith K, Tsai J, Mota N, Southwick SM, Pietrzak RH. Military sexual trauma in US veterans: Results from the National Health and Resilience in Veterans Study. *The Journal of Clinical Psychiatry*. 2014; 75:e1133–e1139. [PubMed: 25373123]
- Lo Y, Mendell N, Rubin D. Testing the number of components in a normal mixture. *Biometrika*. 2001; 88:767–778.
- McLachlan, G., Peel, D. Finite Mixture Models. New York, NY: John Wiley & Sons; 2000.
- Miller MW, Wolf EJ, Kilpatrick D, Resnick H, Marx BP, Holowka Friedman MJ. The prevalence and latent structure of proposed DSM-5 posttraumatic stress disorder symptoms in U.S. national and veteran samples. *Psychological Trauma: Theory, Research, Practice, and Policy*. 2013; 5:501–512.
- Muthén, LK., Muthén, BO. Mplus user's guide. 7th ed.. Los Angeles, CA: Muthén & Muthén; 1998–2012.
- Nylund KL, Asparouhov T, Muthén BO. Deciding on the number of classes in latent class analysis and growth mixture modeling: a Monte Carlo simulation study. *Structural Equation Modeling*. 2007; 14:535–569.
- Patrick CJ, Curtin JJ, Tellegen A. Development and validation of a Brief Form of the Multidimensional Personality Questionnaire. *Psychological Assessment*. 2002; 14:150–163. [PubMed: 12056077]
- Pietrzak RH, Cook JM. Psychological resilience in older U.S. veterans: results from the national health and resilience in veterans study. *Depression and Anxiety*. 2013; 30:432–443. [PubMed: 23468170]
- Ross CA, Ellason JW, Anderson G. A factor analysis of the dissociative experiences scale (DES) in dissociative identity disorder. *Dissociation*. 1995; 8:229–235.
- Schwartz G. Estimating the dimension of a model. *Annals of Statistics*. 1978; 6:461–464.
- Sierra M, Berrios GE. The Cambridge Depersonalization Scale: A new instrument for the measurement of depersonalization. *Psychiatry Research*. 2000; 93:153–164. [PubMed: 10725532]
- Spiegel D, Cardeña E. Disintegrated experience: The dissociative disorders revisited. *Journal of Abnormal Psychology*. 1991; 3:366–378. [PubMed: 1918616]
- Stein DJ, Koenen KC, Friedman MJ, Hill E, McLaughlin KA, Petukhova M, Kessler RC. Dissociation in posttraumatic stress disorder: Evidence from the World Mental Health Surveys. *Biological Psychiatry*. 2013; 73:302–312. [PubMed: 23059051]

- Steinberg, M. Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D). Washington, DC: American Psychiatric Press; 1994.
- Steuwe C, Lanius RA, Frewen PA. Evidence for a dissociative subtype of PTSD by latent profile and confirmatory factor analyses in a civilian sample. *Depression and Anxiety*. 2012; 29:689–700. [PubMed: 22653764]
- Stockdale GD, Gridley BE, Balogh DW, Holtgraves T. Confirmatory factor analysis of single- and multiple-factor competing models of the Dissociative Experiences Scale in a nonclinical sample. *Assessment*. 2002; 9:94–106. [PubMed: 11911239]
- Tellegen, A., Ben-Porath, YS. MMPI-2-RF (Minnesota Multiphasic Personality Inventory-2-Restructured Form): Technical Manual. Minneapolis, MN: University of Minnesota Press; 2008.
- Tsai J, Harpaz-Rotem I, Armour C, Southwick SM, Krystal JH, Pietrzak RH. Dimensional structure of DSM-5 posttraumatic stress disorder symptoms: Results from the National Health and Resilience in Veterans Study. *The Journal of Clinical Psychiatry*. 2014 Advance online publication.
- Waller N, Putnam FW, Carlson EV. Types of dissociation and dissociative types: A taxometric analysis of dissociative experiences. *Psychological Methods*. 1996; 1:300–321.
- Watson D. Investigating the construct validity of the dissociative taxon: Stability analysis of normal and pathological dissociation. *Journal of Abnormal Psychology*. 2003; 112:298–305. [PubMed: 12784840]
- Wisco BE, Marx BP, Miller MW, Wolf EJ, Mota NP, Southwick SM, Pietrzak RH. Posttraumatic stress disorder in the U.S. veteran population according to DSM-5: Results from the National Health and Resilience in Veterans Survey. 2015 Manuscript submitted for publication.
- Wisco BE, Marx BP, Wolf EW, Miller MW, Southwick SM, Pietrzak RH. Posttraumatic stress disorder in the US veteran population: Results from the National Health and Resilience in Veterans Study. *The Journal of Clinical Psychiatry*. 2014; 75:1338–1346. [PubMed: 25551234]
- Wolf EJ, Lunney CA, Miller MW, Resick PA, Friedman MJ, Schnurr PP. The dissociative subtype of PTSD: A replication and extension. *Depression and Anxiety*. 2012; 29:679–688. [PubMed: 22639402]
- Wolf EJ, Miller MW, Reardon AF, Ryabchenko KA, Castillo D, Freund R. A latent class analysis of dissociation and PTSD: Evidence for a dissociative subtype. *Archives of General Psychiatry*. 2012; 69:698–705. [PubMed: 22752235]
- Wright DB, Loftus EF. Measuring dissociation: Comparison of alternative forms of the dissociative experiences scale. *The American Journal of Psychology*. 1999; 112:497–519. [PubMed: 10696264]

Figure 1. Mean Severity Scores on PTSD and Dissociation by Latent Class

The figure shows the mean subscale severity on the National Stressful Events Survey (NSES) and the Dissociative Subtype of PTSD Scale (DSPS) as a function of latent class assignment. Each subscale severity score that was submitted to the analysis reflected the item means for the dichotomous items contributing to that subscale on the NSES and DSPS. PTSD = posttraumatic stress disorder; B = PTSD reexperiencing symptoms; C = PTSD avoidance symptoms; D = PTSD negative alterations in cognition and mood; E = arousal symptoms; dereal/depers = derealization/depersonalization; aware = awareness; psych = psychogenic. Means by class based on complete data ($n = 688$).

Table 1
Dissociative Subtype of PTSD Scale Item Content and Lifetime Item Endorsement Prevalence

Item	Full Sample		By Possible Lifetime PTSD Diagnosis	
	Raw (%) (n = 697)	Weighted (%) (n = 674)	Poss. PTSD (%) (n = 91)	No Poss. PTSD (%) (n = 602)
1. Have there ever been times when you felt disconnected from your body, as if your body were not your own?	9.9	9.5	34.1	6.3
2. Have you ever felt "checked out," that is, as if you were not really present and aware of what was going on around you?	14.3	13.6	48.4	9.3
3. Have there ever been times when you felt like you were outside of your own body, as if you could look at yourself from the outside?	10.2	8.9	26.4	7.8
4. Have you ever "lost time"—that is, been unable to account for large portions of your day or had trouble accounting for what you did for portions of your day?	12.2	11.6	36.3	8.6
5. Have there ever been times when you looked in the mirror and did not recognize yourself physically?	4.2	3.29	15.4	2.5
6. Have there ever been times when you were in a familiar place, yet it seemed strange and unfamiliar to you?	17.2	14.3	46.2	13.0
7. Have there ever been times when your body did not feel real?	5.5	4.1	22.0	3.0
8. Have there ever been times when the world around you (other people, objects, places) did not seem real?	8.9	8.4	36.3	4.8
9. Have there ever been times when your body felt very strange and unfamiliar to you, as if it were not your own body?	4.4	5.3	17.6	2.5
10. Have there ever been times when you felt lost, disoriented, or confused in a location that you know well?	15.9	13.8	50.5	10.9
11. Have there ever been times (other than when you were very tired, sleepy, or on medications or drugs that made you drowsy) when you felt as if you were in a daze or a fog?	10.2	9.5	26.4	7.8
12. Have there ever been times when you felt like you were watching the world around you as an outsider, as if it were a movie, but the world did not seem real?	9.0	7.7	25.3	6.7
13. Have you ever had trouble remembering how you got somewhere (i.e., finding yourself at work, at home, at a store, or elsewhere without remembering how you traveled there)?	17.4	14.8	35.6	14.8
14. Have you ever had trouble remembering important details about _____ (fill in with participant's "worst" traumatic event from prior assessment)	14.3	12.7	40.7	10.6
15. Have you ever thought that you should be able to remember more about _____ (fill in with participant's "worst" traumatic event) than you do?	16.8	12.5	40.7	13.5

Note. PTSD = posttraumatic stress disorder (PTSD); poss = possible. Prevalence of each item by possible PTSD diagnostic status based on raw (unweighted) *n* of 693 with sufficient data to calculate possible PTSD diagnosis.

Table 2

Fit of Exploratory Factor Analytic Models

Model	X ² (df)	RMSEA	SRMR	CFI	TLI	Model Comparison	X ² (df)
1-Factor	463.38 *** (90)	.08	.12	.92	.91		
2-Factor	197.08 *** (76)	.05	.08	.97	.97	1 vs. 2	207.44 *** (14)
3-Factor	133.83 *** (63)	.04	.06	.99	.98	2 vs. 3	57.73 *** (13)
4-Factor	87.93 ** (51)	.03	.05	.99	.98	3 vs. 4	42.92 *** (12)

Note. RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = confirmatory fit index; TLI = Tucker-Lewis index; df = degrees of freedom. Analyses are based on $n = 697$.

**
 $p < .01$.

 $p < .001$.

Table 3

Standardized Factor Loadings from Three-Factor Exploratory Factor Analysis

Item	Factor 1	Factor 2	Factor 3
1. Disconnected from body	.932*	.02	−.094
2. Checked out	.239	.641*	−.042
3. Outside body	.888*	.005	−.164
4. Lost time	.115	.693*	.075
5. Not recognize self	.431*	.308	.004
6. Strange or unfamiliar place	.071	.734*	.167*
7. Body not feel real	.859*	.031	.008
8. World not seem real	.485*	.468*	.021
9. Body is strange or unfamiliar	.980*	−.145	.116
10. Lost or disoriented in place you know well	−.047	.918*	.006
11. Daze or fog	−.119	.739*	.09
12. World is a movie	.395*	.510*	−.081
13. Not remember how got somewhere	−.013	.782*	−.038
14. Trouble remembering trauma details	.006	.031	.993*
15. Should remember more about the trauma	.001	.008	.824*

Note. Correlations between factors were as follows: Factor 1 with Factor 2, $r = .73$; Factor 1 with Factor 3, $r = .41$; Factor 2 with Factor 3, $r = .44$. Item content is abbreviated in this table and full item wording is shown in Table 1. The placement of items on subscales used in subsequent analyses is denoted with bold font. Analyses are based on $n = 697$. $p < .05$.

Table 4

Fit of Latent Profile Analyses

Model	LL	BIC	LMRA <i>p</i>	BLRT <i>p</i>	Entropy
2-Class	41.99	-677.95	< .001	< .001	.94
3-Class	668.04	-1139.67	.07	< .001	.95
4-Class	839.44	-1430.10	.16	< .001	.95
5-Class	1006.99	-1712.82	.15	< .001	.96

Note. LL = loglikelihood value; BIC = Bayesian information criterion; LMRA *p* = *p*-value associated with Lo-Mendell-Rubin-adjusted likelihood ratio test; BLRT *p* = *p*-value associated with the bootstrap likelihood ratio test. Analyses are based on *n* = 697.

Table 5

Effect Size Estimates for Mean Differences in PTSD and Dissociation Subscales as a Function of Latent Class Assignment

Subscale (Item Means)	Effect Size (<i>d</i>) for Pairwise Comparisons		
	Diss vs. PTSD	Diss vs. Asym.	PTSD vs. Asym.
Intrusions	.41	2.85	2.44
Avoidance	.29	2.17	2.44
Negative Alterations in Cog/Mood	.39	2.54	2.15
Arousal	.37	2.75	2.38
Derealization/Depersonalization	4.94	5.22	.28
Loss of Awareness	2.09	2.71	.62
Psychogenic Amnesia	.09	.98	1.07

Note. Diss = dissociative; Asym = asymptomatic; PTSD = posttraumatic stress disorder; cog = cognition. Multivariate data analyses to derive classes were based on $n = 697$ using full information likelihood estimation to handle missing data, but evaluation of means as a function of latent class were conducted in SPSS using only complete data were total $n = 688$ such that n for diss class = 57, n for high PTSD class = 125, and n for asymptomatic class = 506.