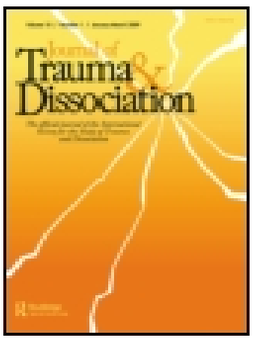

Journal of Trauma & Dissociation

ISSN: 1529-9732 (Print) 1529-9740 (Online) Journal homepage: https://www.tandfonline.com/loi/wjtd20

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To cite this article: Marloes B. Eidhof, F. Jackie June ter Heide, Niels van Der Aa, Monika Schreckenbach, Ulrike Schmidt, Bethany L. Brand, Ruth A. Lanius, Richard J. Loewenstein, David Spiegel & Eric Vermetten (2019): The Dissociative Subtype of PTSD Interview (DSP-I): Development and Psychometric Properties, Journal of Trauma & Dissociation, DOI: 10.1080/15299732.2019.1597806

To link to this article: https://doi.org/10.1080/15299732.2019.1597806

JOURNAL OF TRAUMA & DISSOCIATION
https://doi.org/10.1080/15299732.2019.1597806

The Dissociative Subtype of PTSD Interview (DSP-I): Development and Psychometric Properties

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ABSTRACT

The inclusion of the dissociative subtype of post-traumatic stress disorder (PTSD-DS) in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM–5) reflects the importance of assessing PTSD-DS. We developed the *Dissociative Subtype of PTSD Interview* (DSP-I). This clinician-administered instrument assesses the presence and severity of PTSD-DS (i.e., symptoms of depersonalization or derealization) and contains a supplementary checklist that enables assessment and differentiation of other trauma-related dissociative symptoms (i.e., blanking out, emotional numbing, alterations in sensory perception, amnesia, and identity confusion). The psychometric properties were tested in 131 treatment-seeking individuals with PTSD and histories of multiple trauma, 17.6 % of whom met criteria for PTSD-DS in accordance with the DSP-I. The checklist was tested in 275 treatment-seeking individuals. Results showed the DSP-I to have high internal consistency, good convergent validity with PTSD-DS items of the CAPS-5, and good divergent validity with scales of somatization, anxiety and depression. The depersonalization and derealization scales were highly associated. Moreover, the DSP-I accounted for an additional variance in PTSD severity scores of 8% over and above the CAPS-5 and number of traumatic experiences. The dissociative experiences of the checklist were more strongly associated with scales of overall distress, somatization, depression, and anxiety than scales of depersonalization and derealization. In conclusion, the DSP-I appears to be a clinically relevant and psychometrically sound instrument that is valuable for use in clinical and research settings.

ARTICLE HISTORY
Received 3 December 2017
Accepted 19 January 2019

KEYWORDS
Complex trauma; Semi-structured clinical interview; Assessment; Prevalence; Complex PTSD

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Supplemental data for this article can be accessed here.

The formal inclusion of a dissociative subtype of posttraumatic stress disorder (PTSD-DS) in the *Diagnostic and Statistical Manual of Mental Disorders* 5th edition (DSM-5; American Psychiatric Association [APA], 2013) reflects the burgeoning clinical and empirical evidence that dissociation is a highly salient feature in a subgroup of individuals with PTSD. PTSD-DS is characterized by a diagnosis of PTSD and symptoms of depersonalization (DEP) and derealization (DER). Prevalence rates of PTSD-DS have been found to range between 11% and 30% (e.g., Armour, Elklit, Lauterbach, & Elhai, 2014; Blevins, Weathers, & Witte, 2014; Stein et al., 2013; Steuwe, Lanius, & Frewen, 2012; Wolf et al., 2012, 2012). Compared to individuals with PTSD, individuals with PTSD-DS showed more functional impairment (Boyd et al., 2018; Stein et al., 2013; Steuwe et al., 2012), number and severity of other DSM-IV axis-I and axis-II disorders, suicide risk, and trauma reports of childhood abuse and neglect (Blevins et al., 2014; Boyd et al., 2018; Stein et al., 2013; Steuwe et al., 2012; Wolf et al., 2012). These findings stress the importance of assessing PTSD-DS, yet no validated measure has been available.

Therefore, we developed the *Dissociative Subtype of PTSD-Interview* (DSP-I) and tested its psychometric properties. Given that dissociation can manifest in a variety of ways, differentiating PTSD-DS from other dissociative disorders (DDs) or other trauma-related dissociative symptoms is challenging (Loewenstein, 1991; Spiegel et al., 2011). Therefore, we developed a supplementary checklist of dissociative symptoms other than DEP and DER.

In this paper we first describe the development of the DSP-I. Subsequently, we present the psychometric properties of the DSP-I and the checklist, as well as prevalence rates and characteristics of individuals with PTSD-DS compared to individuals without DS ("PTSD only").

Part I: Development of the Instrument

Background and aims

Prior to the introduction of the PTSD-DS in the DSM-5, research has relied on measures that were not validated for assessment of the PTSD-DS construct (Blevins et al., 2014; Lanius et al., 2002; Stein et al., 2013; Steuwe et al., 2012; Wolf et al., 2012). For example, researchers selected items on dissociation from the PTSD scale: *Clinician-Administered PTSD Scale for DSM-IV* (CAPS-IV; Blake et al., 1995; Steuwe et al., 2012). Alternatively, the *Dissociative Experiences Scale* was used (DES; Bernstein & Putnam, 1986; Stein et al., 2013), which contains several symptoms other than depersonalization and derealization (e.g. amnesia, numbing, identity confusion), yet it generates one single sumscore. This sumscore implies that dissociation should be considered as one unidimensional construct without differentiating DEP and DER from other dissociative symptoms. Several other instruments were developed based on this notion: the *Trauma-Specific Dissociation Scale*

(T-DIS) of the *Detailed Assessment of Posttraumatic Stress* (Briere, 2001), the *Cambridge Dissociation Scale* (CDS; Sierra & Berrios, 2000) and the *Questionnaire of Experiences of Dissociation* (Riley, 1988).

However, some researchers advocated for the deconstruction of dissociation, and considered dissociation as a multidimensional construct. Multidimensional measures were developed of which some included separate scales for DEP and/or DER: the *Multiscale Dissociation Inventory* (MDI; Briere, 2002), the *State Dissociation Scale* (Krüger & Mace, 2002), the *Multidimensional Inventory of Dissociation* (Dell, 2006), the *Dissociative Symptoms Scale* (Carlson et al., 2016), the *Dissociation Questionnaire* (Vanderlinden, van Dyck, Vandereycken, & Vertommen, 1993), and the *Trauma Symptom Inventory* (TSI; Briere, 1995).

In addition to self-report measures, several clinician-administered interviews have been developed. The *Structured Clinical Interview for DSM-IV Dissociative Disorders* (SCID-D; Steinberg, Cicchetti, & Buchanan, 1993) was generally considered the gold standard to assess dissociative disorders in conformance with the DSM-IV. The *Dissociative Disorders Interview Schedule* (Ross et al., 1989) was developed to assess lifetime DSM-IV dissociative disorders. The *Clinician Administered Dissociative States Scale* (CADSS; Bremner et al., 1998) was developed to specifically assess present-state (i.e. at this time, in this room) DEP, DER, and amnesia.

At the time of development of the DSP-I (in 2016), the *Clinician-Administered PTSD Scale for DSM-5* (CAPS-5; Weathers et al., 2013a) and *Posttraumatic Stress Disorder Checklist for DSM-5* (PCL-5; Blevins, Weathers, Davis, Witte, & Domino, 2015) were the only instruments developed for assessment of DSM-5 PTSD-DS. Both instruments use only two items to assess DEP and DER, which results in a limited assessment of what can be understood as multi-faceted phenomena (Briere, Weathers, & Runtz, 2005; Simeon et al., 2008; Spiegel et al., 2011). Consequently, dissociative patients may fail to endorse these two items, and interviewers may fail to accurately diagnose PTSD-DS.

Recently, a self-report measure has been developed to specifically asses PTSD-DS: the *Dissociative Subtype of Posttraumatic Stress Disorder Scale* (DSPS; Wolf et al., 2017), which contains 15 items on dissociation. Factor analysis in trauma-exposed veterans revealed support for a factor structure of lifetime DEP/DER, loss of awareness and amnesia.

In addition to this self-report, we believe that a clinician-rated instrument is needed for assessment of PTSD-DS. One of the reasons is that treatment-seeking trauma-victims show a tendency to over-report, due to high comorbidity rates and high levels of overall psychological distress (Engelhard, Arntz, & Van Den Hout, 2007; Franklin, Repasky, Thompson, Shelton, & Uddo, 2002). Also, experiences of dissociation are often perceived as bizarre/shameful (Kluft, 1991) and are often not disclosed unless prompted in a clinical interview (Bernstein, Ellason, Ross, & Van der Linden, 2001; Bremner, 2014).

In conclusion, an interview is needed that specifically assesses PTDS-DS in line with the DSM-5, that covers the broad range of clinical forms of depersonalization and derealization symptoms. The measure should be easily used in conjunction with an interview-based assessment of PTSD in culturally diverse populations.

Development

Initial item selection

First, The DSM-5 conceptualization of PTSD-DS was taken as a starting point and the literature was reviewed for instruments that have been used in validation studies of DSM-5 PTSD-DS. These included the CAPS-IV, DES, CADSS, TSI, CDS, and the MDI. Ninety-four dissociative phenomena were analyzed and clustered on content overlap. Items were excluded that did not match the DSM-5 conceptualization of PTSD-DS (e.g. identity confusion as a characteristic of dissociative identity disorder, and nonclinical forms of dissociation such as daydreaming).

Expert consultation

Second, five international clinical experts in the field of PTSD and dissociation (Ruth Lanius, Bethany Brand, Ulrike Schmidt, Richard Loewenstein and David Spiegel) were asked to select experiences indicative of DEP and DER. Consensus was reached on 10 different experiences: Disconnection from the self, Watching oneself as if another person, Body not belonging to the self, Feeling mechanical, Distortion of own voice, Detachment from here and now, Unreal surroundings, Seeing the world through a fog, Seeing the world from a distance, and Distorted surroundings. Additionally, two experiences which have been shown to highly cluster on DEP, 'the experience of feeling mechanical' and 'the experience as if one's own voice sounds unreal' (Simeon et al., 2008), were added. As no agreement on severity ratings for dissociation yet exists, we decided to follow the rating rules of the CAPS-5 (please see under Assessment Instruments in the Method section).

Compartments C and D were added to investigate trauma-relatedness and duration of the symptoms, and to detect dissociative symptoms that can be observed but not reported by respondents. The questions in compartments C and D are optional, and not required for establishing a diagnosis of PTSD-DS.

For the checklist of trauma related dissociative symptoms, experiences that were excluded in the first stage were re-evaluated (e.g. symptoms of amnesia) and grouped into different aspects of dissociation based on biologically-based research: blanking out/disengagement, emotional numbing, alterations in

sensory perception, amnesia, and identity confusion (see Krystal, Bennett, Bremner, Southwick, & Charney, 1995). The experts proposed an additional set of dissociative experiences that they frequently encountered in trauma-exposed individuals. From a set of 101 experiences, the experts agreed on a selection of 21 experiences.

Initial evaluation

Face validity and usability

The first pilot study was conducted to inspect face validity and usability of the items. A group of 11 experienced clinicians working in the field of PTSD and dissociation provided feedback on the wording, clarity, sensitivity and specificity of items until saturation was reached.

Clinical utility

The second pilot study was conducted to test clinical utility in a non-Western population. In Uganda 163 refugees with a history of trauma-exposure were interviewed with a preliminary version of the DSP-I, results of which will be published elsewhere. Twelve interviewers provided feedback on item intelligibility, resulting in changes to the instructions and the transfer of "detachment from here and now" to the DSP-I checklist.

Patient interviews

Subsequently, three Dutch outpatients with PTSD-DS (two women; age range = 40–52 years) who were treated at Center '45 provided feedback to further improve the DSP-I. Wording was subsequently changed to facilitate understanding of several items. See Appendix I for the final format of items.

Part II: Psychometric Properties

Method

Participants and procedure

To investigate psychometric properties, a fourth study was conducted with the final version of the DSP-I and checklist. Data were collected in Center '45, a specialized center for diagnostics and treatment of complex psychotrauma-related psychopathology in the Netherlands, between 2015 and 2017. As part of the routine diagnostic intake procedure, patients who met the A-criterion for PTSD were assessed for the presence of PTSD and PTSD-DS using the CAPS-5 and the DSP-I. Other clinically relevant features (e.g., psychopathology, quality of life), including the DSP-I checklist, were assessed using self-report measures. These measures were also administered to individuals who did not meet criterion A.

The total sample consisted of 320 individuals: 123 participants completed the CAPS-5, DSP-I and the checklist, 45 completed only the CAPS-5 and DSP-I, and 152 completed only the checklist.

Psychometric properties of the DSP-I were evaluated in a subsample of 131 patients (out of 168 patients; 78%) who met a PTSD-diagnosis based on the CAPS-5. Psychometric properties of the checklist were evaluated in a subsample of 275 treatment-seeking individuals.

The mean age in the total sample was 48.8 years (*SD* = 12.1; range 19–83 years) and 66.6% (*n* = 213) were male. Different potentially traumatic events (PTEs) were reported: persecution (*n* = 48, 15.0%), military duty-related events (*n* = 76, 23.8%), profession-related events (*n* = 47, 14.7%), prolonged childhood abuse (*n* = 85, 26.6%), other events during childhood (*n* = 26, 8.1%), traumatic loss (*n* = 20, 6.3%), and other interpersonal and/or multiple traumatic events (*n* = 18, 5.6%). All patients provided written informed consent for the use of their data for research purposes.

Assessment instruments

To assess PTSD symptomatology, patients were interviewed with the CAPS-5 (Weathers et al., 2013a;Weathers et al., 2017). The CAPS-5 contains 20 items corresponding to the PTSD-criteria in DSM-5, two items to assess PTSD-DS, and three items on functional impairment. Symptoms are rated on 5-point scales ranging from 0 (*absent*) to 4 (*extreme/incapacitating*). A symptom is considered present when rated 2 or higher and the DSM-5 algorithm is followed for making a PTSD diagnosis. By summing the 20 symptom severity scores, a PTSD severity score is computed ranging between 0 and 80. For a diagnosis of PTSD-DS a score of at least 2 (*moderate*) is needed on either DEP or DER. By summing the severity scores of DEP and DER, a dissociative subtype severity score is computed ranging between 0 and 8. The CAPS-5 has manifested high internal consistency (Cronbach's α = .88) and interrater reliability (ICC = .91) (Weathers et al., 2017).

The DSP-I initially contained five DEP items and four DER items with similar structure and scoring rules as the CAPS-5. Symptoms are assessed over the past month and a dissociative symptom is considered present if its severity is rated 2 or higher. A dissociative subtype diagnosis is made with a total score of at least 2 (*moderate*) on either DEP or DER. By summing the severity scores of the items, a DEP severity score was computed ranging between 0 and 20, a DER severity score ranging between 0 and 16, and a total severity score ranging between 0 and 36. After psychometric evaluation the DSP-I resulted in eight items: five DEP items and three DER items with a severity score ranging between 0–32. See online supplement for the final version and instructions.

The checklist initially consisted of 22 items in *no* or *yes* self-report format, organized in five domains of dissociative experiences: blanking out/disengagement, emotional numbing, alteration in sensory perception, amnesia and

identity confusion. The severity score was calculated by summing the items that were answered with yes, resulting in a range from 0 to 22. After psychometric evaluation the checklist resulted in 21 items with a total score range of 0–21. See Appendix I for the final version and instructions.

Trauma-exposure was assessed using the Life Events Checklist for DSM-5 (LEC-5, Weathers et al., 2013b). This is a self-report measure that assesses exposure to 17 PTEs. Items are rated on a 6-point scale: 1 = *it happened to you personally*, 2 = *you witnessed it happen to someone else*, 3 = *you learned about it happening to a close family member or close friend*, 4 = *you were exposed to it as part of your job*, 5 = *you're not sure if it fits*, and 6 = *it doesn't apply to you*, with 1 to 4 counting as present. In current study, a total score was calculated by counting the number of PTEs the participants had been exposed to.

To investigate overall psychological distress, the *Brief Symptom Inventory* (BSI; Derogatis & Spencer, 1993) was used. The BSI is a self-report measure that assesses psychological distress according to 9 symptom dimensions, four of which were used in the present study: overall psychological distress, somatization, depression, and anxiety. The BSI contains 53 items, rated on a 5-point Likert scale ranging from 0 (*not at all)* to 4 *(extremely)*. Total scores for overall psychological distress and the subscales are calculated by averaging the scores of the corresponding items. Suicidal thoughts are assessed with item 9 (*Thoughts of ending your life*). The BSI has demonstrated good psychometric properties with Cronbach's alphas ranging from .71 to .85, and test-retest correlations ranging from .68 to .91 (Derogatis & Spencer, 1993).

No additional measures of dissociation were administered in this study.

Data analysis

SPSS 23 for Windows was used for all analyses. Internal consistency was evaluated with Cronbach's alpha, inter-item correlations, and item-total-correlations. Internal consistency can be considered good when Cronbach's alpha for the total scale is > .80 and most inter-item correlations are in the recommended range of .15 – .50 (moderate magnitude) (Clark & Watson, 1995). Because Cronbach's alpha is a function of scale length, it was expected to be lower for the scales that contain only a few items (i.e. the DEP and DER subscales of the DSP-I and the subscales of blanking out, emotional numbing, and identity confusion of the checklist). Corrected item-total correlations were computed to assess whether scores on the individual items were adequate representations of a PTSD-related dissociation construct. Convergent validity of PTSD-DS between the DSP-I and CAPS-5 was evaluated using kappa. The association between two nominal scales is considered good when the kappa coefficient is > .8, substantial when it is > .6, and moderate when it is > .4 (Landis & Koch, 1977).

To evaluate convergent and divergent validity of both the DSP-I and the checklist, Pearson correlations were compared between the DSP-I and the checklist on the one hand, and several other measures described above on the other. Independent-samples t-tests and chi-square tests were also conducted for this purpose. To evaluate incremental validity of the DSP-I, hierarchical regression analyses were used. We were interested in the unique contribution of DEP and DER symptoms to the PTSD severity beyond the effect of a history of PTE(s) and beyond the CAPS-5 dissociative subtype severity score. The criterion measures PTSD symptom severity and overall psychological distress were regressed on the covariate number of PTEs, CAPS-5 dissociative subtype severity, and DSP-I total severity. It was tested whether adding DSP-I total severity to the model led to a significant increase in the R^2 of the model.

Results

For symptom endorsement rates and descriptive statistics of the DSP-I and the checklist, please see the online supplements.

Internal consistency

Internal consistency was high for the total DSP-I (α = .83) and acceptable for the DEP (α = .78) and DER (α = .60) subscales. The Pearson correlation between the DEP and DER subscales was highly significant (r = .67, p < .001), indicating that DEP and DER symptoms frequently co-occur with the same level of severity. Internal consistency was acceptable for all subscales of the checklist: blanking out/disengagement (α = .57), emotional numbing (α = .79), alterations in sensory perception (α = .75), amnesia (α = .73), and identity confusion (α = .63).

Inter-item correlations indicate that the total DSP-I, as well as the DEP and DER subscales, and the subscales of the checklist, feature a differentiated item set with the majority of inter-item correlations falling in the recommended range of moderate magnitude of .15- .50 (see Table 1).

The corrected item-total correlations indicate that the DSP-I items are adequate representations of a PTSD-related dissociation construct. The DEP-items adequately represent the DEP-construct and after removal of item 9 (with a low corrected item-total correlation of .19), the remaining items are adequate representations of the DER-construct.

Corrected item-total correlations indicate that the items of the checklist subscales emotional numbing, alterations in sensory perception, and amnesia are adequate representations of the intended constructs. After removal of item 1 from the blanking out/disengagement scale (with a corrected item-

Table 1. Internal consistency analysis of the DSP-I and checklist

	Min	Max	*M*	% recommended range
		Inter-item correlations		
DSP-I				
Total dissociative subtype severity	.07	.71	.34	80.6%
Depersonalization	.23	.71	.42	80.0%
Derealization	.07	.48	.27	66.7%
Checklist				
Blanking out	.09	.36	.24	66.7%
Emotional numbing	.50	.67	.56	66.7%
Sensory perception	.15	.43	.31	100.0%
Amnesia	.14	.58	.31	80.0%
Identity confusion	.46	[a]	[a]	[a]
		Corrected item-total correlations		
DSP-I				
Total dissociative subtype severity	.31	.76	.53	–
Depersonalization	.38	.73	.57	–
Derealization	.19	.46	.39	–
Derealization (without item 4)	.42	.50	.47	–
Checklist				
Blanking out	.20	.42	.35	–
Blanking out (without item 1)	.39	.44	.41	–
Emotional numbing	.73	.75	.72	–
Sensory perception	.39	.55	.47	–
Amnesia	.30	.60	.47	–
Identity confusion	.46	[a]	[a]	–

Note. [a] Not applicable because the identity confusion scale consists of 2 items; % recommended range: % of inter-item correlation in the recommended range of .15-.50.

total correlation of .20), the remaining items adequately represent the underlying construct.

Convergent and divergent validity

There was a moderate association on PTSD-DS diagnosis between the DSP-I and the CAPS-5, with a kappa of .58. Table 2 presents a contingency table with the number and percentage of patients with PTSD-DS and PTSD-only according to the DSP-I and CAPS-5.

According to the DSP-I, 23 patients (17.6%) who met criteria for a PTSD-diagnosis also met criteria for PTSD-DS. According to the CAPS-5, 31 patients (23.7%) met criteria for PTSD-DS. In 113 out of 131 cases (86.3%), the DSP-I and the CAPS-5 were in agreement on the presence or absence of PTSD-DS. In five cases the DSP-I yielded the presence of PTSD-DS while the CAPS-5 did not, and in 13 cases the DSP-I yielded the absence of PTSD-DS whereas the CAPS-5 did not.

Table 3 presents the means and standard deviations of the checklist subscales for patients with and without PTSD-DS according to the DSP-I.

Patients with PTSD-DS reported significantly more alterations in sensory processing compared to those with PTSD-only. Mean levels of blanking out/

Table 2. *Number and percentage of patients with PTSD-DS and PTSD-only according to the DSP-I and the CAPS-5.*

		DSP-I		
		PTSD-DS	PTSD-only	Total
CAPS-5	PTSD-DS	18 (78.3%)	13 (12.0%)	31
	PTSD-only	5 (21.7%)	95 (88.0%)	100
	Total	23	108	131

Table 3. *Means and standard deviations of the supplementary checklist scales for patients with PTSD-only and PTSD-DS.*

	PTSD-only		PTSD-DS				
	M	*SD*	*M*	*SD*	*t*	*df*	*p*
Blanking out	2.77	1.05	3.31	0.87	−1.94	91	.06
Emotional numbing	2.01	1.12	2.00	1.10	0.04	91	.97
Sensory perception	2.34	1.92	3.94	1.95	−3.02	91	<.01
Amnesia	2.71	1.74	3.50	1.55	−1.68	91	.10
Identity confusion	0.81	0.83	0.94	0.77	−0.59	91	.56

disengagement and amnesia were also substantially higher for patients with PTSD-DS compared to patients with PTSD-only, although these differences did not reach statistical significance.

Table 4 presents correlations between all scales of the DSP-I and the checklist on the one hand, and PTSD symptom severity (CAPS-5), overall psychological distress, somatization, depression, and anxiety (BSI) on the other.

As expected, the strongest significant correlations were observed between the DEP and DER scales of the DSP-I, and the DEP and DER items of the CAPS-5. Significant correlations were also found between the DEP and DER scales of the DSP-I on the one hand, and CAPS-5 PTSD symptom severity on the other. The weakest correlations were observed between the DSP-I DEP and DER scales and scales of overall psychological distress, somatization, depression, and anxiety. These correlations were modest and partly significant. In conclusion, the correlational structure indicates good convergent and divergent validity of the DSP-I.

Women scored significantly more often on PTSD-DS than men: 41% of women and 8% of men with a PTSD-diagnosis endorsed PTSD-DS ($\chi^2(1) = 21.13$, $p < 0.001$). Patients with PTSD-DS ($M = 39.87$, $SD = 11.80$) were significantly younger than patients with PTSD-only ($M = 45.56$, $SD = 11.70$; $t(129) = 2.11$, $p = 0.04$). Suicidal thoughts were reported significantly more often by patients with PTSD-DS (74%) than patients with PTSD-only (49%; $\chi^2(1) = 4.694$, $p = 0.03$). There were no significant differences in impairment in social ($\chi^2(1) = 0.007$, $p = 0.93$), occupational or other important areas of functioning ($\chi^2(1) = 1.175$, $p = 0.28$) between patient with PTSD-DS and PTSD-only.

Regarding the correlations between the trauma related dissociative symptoms (assessed with the checklist) on the one hand, and DEP and DER

Table 4. *Convergent and divergent validity Pearson correlation coefficients of the DSP-I and checklist.*

	DSP-I						Checklist									
	Total severity		DEP		DER		Blanking out		Emotional numbing		Sensory perception		Amnesia		Identity confusion	
	r	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*
Total severity (DSP-I)	–	–	–	–	–	–	.30**	158	.09	158	.42**	158	.27**	158	.11	158
DEP (DSP-I)	–	–	–	–	–	–	.26**	158	.09	158	.39**	158	.24**	158	.08	158
DER (DSP-I)	–	–	–	–	–	–	.31**	158	.08	158	.39**	158	.27**	158	.12	158
Dissociative subtype(CAPS-5)	.75**	131	.74**	131	.62**	131	.31**	193	.06	193	.37**	193	.21**	193	.11	193
DEP (CAPS-5)	.62**	131	.64**	131	.47**	131	.28**	193	−.01	193	.29**	193	.18*	193	.13	193
DER (CAPS-5)	.68**	131	.64**	131	.60**	131	.22**	.193	.12	193	.31**	193	.17*	193	.03	193
PTSD symptom severity	.43**	131	.42**	131	.36**	131	.43**	194	.33**	194	.47**	194	.38**	194	.23**	194
Overall psychological distress	.17*	129	.17	129	.15	129	.50**	275	.38**	275	.48**	275	.49**	275	.38**	275
Somatization	.22*	129	.22*	129	.16	129	.40**	275	.35**	275	.49**	275	.45**	275	.30**	275
Depression	.24**	129	.21*	129	.23**	129	.38**	275	.36**	275	.40**	275	.36**	275	.31**	275
Anxiety	.16	129	.14	129	.14	129	.47**	275	.30**	275	.43**	275	.44**	275	.31**	275

Note. * $p < .05$; ** $p < .01$.

severity (assessed with the DSP-I and CAPS-5) on the other, Table 4 shows that significant correlations were only found for the subscales of blanking out/disengagement, alterations in sensory processing, and amnesia. All scales of the checklist significantly correlated with PTSD symptom severity and the BSI psychological distress scales. Interestingly, the scales of the checklist correlated more strongly with scales of PTSD symptom severity and scales of psychological distress than with DEP and DER scales of the DSP-I or CAPS-5.

Incremental validity

Results of the hierarchical regression models are shown in Table 5.

First, PTSD symptom severity and overall psychological distress were adjusted for the number of PTE types by adding it to the model in step 1. CAPS-5 dissociative subtype severity was added to the model in step 2. This was significantly associated with increased PTSD symptom severity, but not with overall psychological distress. It accounted for 8% of the variation in PTSD symptom severity and for 2 % in overall psychological distress. DSP-I total severity was added to the model in step 3. This was significantly associated with increased PTSD symptom severity, but not with overall psychological distress. Interestingly, it accounted for an additional 8% of the variation in PTSD symptom severity. DSP-I total severity did not significantly account for an additional part of the variation in overall psychological distress. These results confirm the incremental validity of the DSP-I within the context of PTSD symptom severity.

Discussion

Psychometric properties of the DSP-I

We developed the DSP-I, a clinician-rated interview to assess presence and severity of PTSD-DS, and a supplementary checklist to assess other trauma-related dissociative symptoms. The DSP-I has shown to be a reliable measure, with high internal consistency for the total scale and acceptable internal consistency for the two, relatively brief DEP and DER subscales. After removal of one item that performed poorly on the scale, the DEP and DER items provided adequate representations of the PTDS-DS DEP and DER constructs that were highly associated. This is in line with the literature (DSM-5; APA, 2013; Briere et al., 2005; Steuwe et al., 2012), indicating that DEP and DER symptoms frequently occur together with the same level of severity.

The convergent validity of the DSP-I was good, with a significant coherence between the DSP-I and the dissociative subtype symptoms of the CAPS-

Table 5. *Hierarchical regression models of predictors of symptom severity with regard to PTSD and overall psychological distress.*

	PTSD symptom severity					Overall psychological distress				
	B	SE	Beta	ΔR^2	Total R^2	B	SE	Beta	ΔR^2	Total R^2
Step 1				.07**	.07				.01	.01
Intercept	33.23	2.52				1.90	.20			
Number of PTEs	.81**	.28	.26			.03	.02	.10		
Step 2				.08**	.15				.02	.03
Intercept	32.90	2.42				1.88	.20			
Number of PTEs	.69**	.27	.22			.02	.02	.08		
PTSD-DS severity (CAPS-5)	1.85**	.55	.29			.08	.05	.16		
Step 3				.08**	.23				.02	.05
Intercept	31.91	2.33				1.85	.20			
Number of PTEs	.75**	.26	.24			.02	.02	.09		
PTSD-DS severity (CAPS-5)	.15	.73	.02			.02	.06	.04		
Total severity (DSP-I)	.83**	.25	.38			.03	.02	.17		

Note. * $p < .05$; ** $p < .01$

5. The DSP-I also corresponded significantly with the PTSD symptoms of the CAPS-5. Compared to individuals with PTSD-only, individuals with PTSD-DS scored higher on the dissociation scales of the checklist. With regard to divergent validity, the weakest coherence was found between the DSP-I and scales of somatization, depression, anxiety, and overall distress. These results indicate good convergent and divergent validity.

With regard to the incremental validity, a PTSD-DS diagnosis was established for 31 individuals according to the CAPS-5, compared with 23 individuals according to the DSP-I. These findings suggest that the broader symptom range of DSP-I combined with detailed interviewing leads to sensitive yet conservative assessment of PTSD-DS compared to the fewer, more general (and presumably less specific) items of the CAPS-5. This was supported by the hierarchical regression analyses showing that compared to the CAPS-5, the DSP-I explains twice the amount of variation in PTSD symptom severity when controlling for the number of traumatic experiences. Thus, the DSP-I enables detection of individual differences of PTSD-DS better than the CAPS-5 alone, despite the number of traumatic experiences.

Psychometric properties of the checklist

All checklist subscales revealed an acceptable internal consistency. After removal of one item with a low item-total correlation, the remaining items adequately represented the underlying constructs. All subscales corresponded with PTSD symptom severity and scales for overall psychological distress, somatization, depression, and anxiety. Except for the sensory perception scale, individuals with PTSD-DS and PTSD-only did not significantly differ in endorsement on the checklist scales. Interestingly, these findings may indicate that other dissociative symptoms are present in individuals with severe PTSD, but are not specifically related to PTSD-DS. That is, additional dissociative symptoms (other than DEP and DER) in individuals with PTSD, should not be mistakenly classified as PTSD-DS. This would support the purpose of this checklist in guiding differential diagnostics of PTSD-DS and other dissociative symptoms. Given the high concordance with all subscales of the BSI, these dissociative symptoms could be a representation of high levels of overall psychological distress. An alternative explanation may lie in the different types of assessments that were used, which may have resulted in less differentiated scores on (and high concordance between) the self-report checklists compared to the clinician-rated scores of the DSP-I (Engelhard et al., 2007; Franklin et al., 2002).

Strenghts, limitations, and future research

The DSP-I is the first differentiated interview for assessment of PTSD-DS. It was developed based on the literature and consultation with experts,

clinicians, and trauma-exposed patients. It is a comprehensive interview that, in conjunction with the CAPS-5, easily fits into standard diagnostic routine. While the items were selected very carefully, choices are open to debate. Other dissociative phenomena, including spirit possession which is currently not included under PTSD-DS in the DSM-5 (Sar, Alioğlu, & Akyüz, 2014), might need to be included in future versions.

It is important to emphasize that no "gold standard" for PTSD-DS nor information on the average duration and intensity of symptoms is available yet. Since this information is available for PTSD, the PTSD-DS uses the scoring rules of CAPS-5 in combination with clinical expertise as a starting point for further research. These scoring rules need further validation.

The checklist enables the screening for other dissociative symptoms. In the checklist we incorporated several DSM-5 criterion items for DDs, endorsement of which may indicate presence of (comorbid) dissociative disorders. However, we did not conduct validity analyses with measures of dissociative disorders. Therefore, no conclusions can be drawn about the predictive validity of the checklist for diagnoses of DDs.

Conclusion

The DSP-I is the first validated clinician-administered interview that assesses the presence, severity and onset of PTSD-DS conforming to the DSM-5 diagnostic criteria, as well as the presence of associated dissociative symptoms. DSP-I appears to be a clinically relevant and psychometrically sound instrument that is able to capture individual differences in a population of individuals with PTSD, based on symptoms of depersonalization and derealization. We expect the DSP-I to contribute to an evidence-based understanding of PTSD-DS, and to facilitate diagnostics and research on PTSD-DS and trauma-related symptoms.

Funding

This work was supported by the International Society for the Study of Trauma and Dissociation (ISSTD) [David Caul Award].

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References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (*5th* ed.). Arlington, VA: American Psychiatric Publishing.

Armour, C., Elklit, A., Lauterbach, D., & Elhai, J. D. (2014). The DSM-5 dissociative-PTSD subtype: Can levels of depression, anxiety, hostility, and sleeping difficulties differentiate between dissociative-PTSD and PTSD in rape and sexual assault victims? *Journal of Anxiety Disorders*, *28*(4), 418–426. doi:10.1016/j.janxdis.2013.12.008

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease*, *174*(12), 727–735. doi:10.1097/00005053-198612000-00004

Bernstein, I. H., Ellason, J. W., Ross, C. A., & Vanderlinden, J. (2001). On the dimensionalities of the Dissociative Experiences Scale (DES) and the Dissociation Questionnaire (DIS-Q). *Journal of Trauma & Dissociation*, *2*(3), 101–120. doi:10.1300/J229v02n03_07

Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D., Charney, D. S., & Keane, T. M. (1995). The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress*, *8*, 75–90. doi:10.1002/jts.2490080106

Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress*, *28*(6), 489–498. 10.1002/jts.22059

Blevins, C. A., Weathers, F. W., & Witte, T. K. (2014). Dissociation and posttraumatic stress disorder: A latent profile analysis. *Journal of Traumatic Stress*, *27*(4), 388–396. doi:10.1002/jts.21933

Boyd, J. E., Protopopescu, A., O'Connor, C., Neufeld, R. W., Jetly, R., Hood, H. K., Lanius, R. A., & McKinnon, M. C. (2018). Dissociative symptoms mediate the relation between PTSD symptoms and functional impairment in a sample of military members, veterans, and first responders with PTSD. *European Journal of Psychotraumatology*, *9*(1), 1463794. doi:10.1080/20008198.2018.1463794

Bremner, J. D. (2014). *The Clinician Administered Dissociative States Scale (CADSS)*. Unpublished manuscript, Department of Clinical Neuroscience, Georgia, Emory University.

Bremner, J. D., Krystal, J. H., Putnam, F. W., Southwick, S. M., Marmar, C., Charney, D. S., & Mazure, C. M. (1998). Measurement of dissociative states with the clinician-administered dissociative states scale (CADSS). *Journal of Traumatic Stress*, *11*(1), 125–136. doi:10.1023/A:1024465317902

Briere, J. (1995). *Trauma Symptom Inventory (TSI)*. Odessa, FL: Psychological Assessment Resources. doi:10.1002/9780470479216.corpsy1010

Briere, J. (2001). *Detailed Assessment of Posttraumatic Stress (DAPS)*. Odessa, FL: Psychological Assessment Resources.

Briere, J. (2002). *Multiscale Dissociation Inventory (MDI)*. Odessa, FL: Psychological Assessment Resources.

Briere, J., Weathers, F. W., & Runtz, M. (2005). Is dissociation a multidimensional construct? Data from the multiscale dissociation inventory. *Journal of Traumatic Stress*, *18*(3), 221–231. doi:10.1002/jts.20024

Carlson, E. B., Waelde, L. C., Palmieri, P. A., Macia, K. S., Smith, S. R., & McDade-Montez, E. (2016). Development and validation of the dissociative symptoms scale. *Assessment*, *25*(1), 84–98. doi:10.1177/1073191116645904

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7*, 309–319. doi:10.1037/1040-3590.7.3.309

Dell, P. F. (2006). The Multidimensional Inventory of Dissociation (MID): A comprehensive measure of pathological dissociation. *Journal of Trauma & Dissociation*, *7*(2), 77–106. doi:10.1300/J229v07n02_06

Derogatis, L. R., & Spencer, P. M. (1993). *Brief symptom inventory: BSI*. Upper Saddle River, NJ: Pearson.

Engelhard, I. M., Arntz, A., & Van Den Hout, M. A. (2007). Low specificity of symptoms on the posttraumatic stress disorder (PTSD) symptom scale: A comparison of individuals with

PTSD, individuals with other anxiety disorders and individuals without psychopathology. *British Journal of Clinical Psychology*, *46*(4), 449–456. doi:10.1348/014466507X206883

Franklin, C. L., Repasky, S. A., Thompson, K. E., Shelton, S. A., & Uddo, M. (2002). Differentiating overreporting and extreme distress: MMPI-2 use with compensation-seeking veterans with PTSD. *Journal of Personality Assessment*, *79*(2), 274–285. doi:10.1207/S15327752JPA7902_10

Kluft, R. P. (1991). The use of hypnosis with dissociative disorders. *Psychiatric Medicine*, *10*(4), 31–46.

Krüger, C., & Mace, C. J. (2002). Psychometric validation of the State Scale of Dissociation (SSD). Psychology and psychotherapy. *Theory, Research and Practice*, *75*(1), 33–51. doi:10.1348/147608302169535

Krystal, J. H., Bennett, A. L., Bremner, J. D., Southwick, S. M., & Charney, D. S. (1995). Toward a cognitive neuroscience of dissociation and altered memory functions in post-traumatic stress disorder. In M. J. Friedman, D. S. Charney, & A. Y. Deutch (Eds.), *Neurobiological and clinical consequences of stress: From normal adaptation to PTSD* (pp. 239–269). Philadelphia, PA: Lippincott-Raven Publishers.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*, 159–174. doi:10.2307/2529310

Lanius, R. A., Williamson, P. C., Boksman, K., Densmore, M., Gupta, M., Neufeld, R. W., Gati, J. S., & Menon, R. S. (2002). Brain activation during script-driven imagery induced dissociative responses in PTSD: A functional magnetic resonance imaging investigation. *Biological Psychiatry*, *52*(4), 305–311. doi:10.1016/S0006-3223(02)01367-7

Loewenstein, R. J. (1991). An office mental status examination for complex chronic dissociative symptoms and multiple personality disorder. *Psychiatric Clinics of North America*, *14*, 567–604. doi:10.1016/s0193-953x(18)30290-9

Riley, K. C. (1988). Measurement of dissociation. *The Journal of Nervous and Mental Disease*, *176*, 449–450. doi:10.1097/00005053-198807000-00008

Ross, C. A., Heber, S., Norton, G. R., Anderson, D., Anderson, G., & Barchet, P. (1989). The dissociative disorders interview schedule: A structured interview. *Dissociation*, *2*(3), 169–189. doi:10.1037/e609942012-089

Sar, V., Alioğlu, F., & Akyüz, G. (2014). Experiences of possession and paranormal phenomena among women in the general population: Are they related to traumatic stress and dissociation? *Journal of Trauma & Dissociation*, *15*(3), 303–318. doi:10.1080/15299732.2013.849321

Sierra, M., & Berrios, G. E. (2000). The Cambridge depersonalisation scale: A new instrument for the measurement of depersonalisation. *Psychiatry Research*, *93*(2), 153–164. doi:10.1016/S0165-1781(00)00100-1

Simeon, D., Kozin, D. S., Segal, K., Lerch, B., Dujour, R., & Giesbrecht, T. (2008). De-constructing depersonalisation: Further evidence for symptom clusters. *Psychiatry Research*, *157*(1), 303–306. doi:10.1016/j.psychres.2007.07.007

Spiegel, D., Loewenstein, R. J., Lewis-Fernández, R., Sar, V., Simeon, D., Vermetten, E., Cardeña, E., & Dell, P. F. (2011). Dissociative disorders in DSM-5. *Depression and Anxiety*, *28*(12), E17–E45. doi:10.1002/da.20874

Stein, D. J., Koenen, K. C., Friedman, M. J., Hill, E., McLaughlin, K. A., Petukhova, M., Ruscio, A. M., Shahly, V., Spiegel, D., & Borges G. (2013). Dissociation in posttraumatic stress disorder: Evidence from the world mental health surveys. *Biological Psychiatry*, *73*(4), 302–312. doi:10.1016/j.biopsych.2012.08.022

Steinberg, M., Cicchetti, D., Buchanan, J., & Hall, P. (1993). Clinical assessment of dissociative symptoms and disorders: The structured clinical interview for DSM-IV Dissociative Disorders (SCID-D). *Dissociation: Progress in the Dissociative Disorders*, *6*(1), 3–5.

Steuwe, C., Lanius, R. A., & Frewen, P. A. (2012). The role of dissociation in civilian posttraumatic stress disorder: Evidence for a dissociative subtype by latent class and confirmatory factor analysis. *Depression and Anxiety*, *29*(8), 689–700. doi:10.1002/da.21944

Vanderlinden, J., van Dyck, R., Vandereycken, W., & Vertommen, H. (1993). Dissociatieve ervaringen bij Vlamingen en Nederlanders; een studie met de Dissociation Questionnaire (DIS–Q). *Directieve therapie*, *13*(1), 27–36. doi:10.1007/bf03060020

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013a). *The Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)*. Interview available from the National Center for PTSD at www.ptsd.va.gov.

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013b). The life events checklist for DSM-5 (LEC-5). Instrument available from the National Center for PTSD at www.ptsd.va.gov.

Weathers, F. W., Bovin, M. J., Lee, D. J., Sloan, D. M., Schnurr, P. P., Kaloupek, D. G., Keane, T. M., & Marx, B. P. (2017). The Clinician-Administered PTSD Scale for DSM–5 (CAPS-5): Development and initial psychometric evaluation in military veterans. *Psychological Assessment*, Advance online publication. doi: 10.1037/pas0000486

Wolf, E. J., Lunney, C. A., Miller, M. W., Resick, P. A., Friedman, M. J., & Schnurr, P. P. (2012). The dissociative subtype of PTSD: A replication and extension. *Depression and Anxiety*, *29*(8), 679–688. doi:10.1002/da.21946

Wolf, E. J., Miller, M. W., Reardon, A. F., Ryabchenko, K. A., Castillo, D., & Freund, R. (2012). A latent class analysis of dissociation and posttraumatic stress disorder: Evidence for a dissociative subtype. *Archives of General Psychiatry*, *69*(7), 698–705. doi:10.1001/archgenpsychiatry.2011.1574

Wolf, E. J., Mitchell, K. S., Sadeh, N., Hein, C., Fuhrman, I., Pietrzak, R. H., & Miller, M. W. (2017). The dissociative subtype of PTSD scale: Initial evaluation in a national sample of trauma-exposed veterans. *Assessment*, *24*(4), 503–516. doi:10.1177/1073191115615212