

Dissociative Subtype of Posttraumatic Stress Disorder or PTSD With Comorbid Dissociative Disorders: Comparative Evaluation of Clinical Profiles

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Introduction: The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013) introduced a dissociative subtype for patients with posttraumatic stress disorder (PTSD) and depersonalization and/or derealization symptoms. Despite high comorbidity rates between PTSD and dissociative disorders (DDs), research has not paid attention to the differentiation or overlap between the dissociative subtype of PTSD and DDs. This raises a question: To what extent do patients with dissociative PTSD differ from patients with PTSD and comorbid DDs? **Method:** We compared three groups of complex patients with trauma-related disorders and/or personality disorders ($n = 150$): a dissociative PTSD, a nondissociative PTSD, and a non-PTSD group of patients with mainly personality disorders. We used structured clinical interviews and self-administered questionnaires on dissociative symptoms and disorders, personality disorders, trauma histories, depression, anxiety, and general psychopathology. The Dissociative Experiences Scale (DES; ≥ 20) and the depersonalization/derealization subscale of the DES were used for differentiating dissociative PTSD from nondissociative PTSD. **Results:** Of all patients, 33% met criteria for dissociative PTSD. More than half of the dissociative PTSD patients (54%) met criteria for one or more DDs; using the depersonalization/derealization subscale of the DES, even 66% had a comorbid DD. But also of the non-PTSD patients, 24% had a mean DES score of ≥ 20 . There were no symptomatic differences (e.g., depression and anxiety) between dissociative PTSD with and without comorbid DDs. **Conclusion:** Overlap between dissociative PTSD and DD is large and we recommend replication of previous studies, using structured clinical assessment of DDs.

Clinical Impact Statement

This study suggests that there is substantial overlap between the dissociative subtype of posttraumatic stress disorder (PTSD), which is added to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, and dissociative disorders. More than half of the patients who were diagnosed with PTSD met the criteria of dissociative PTSD. Furthermore, approximately half of the patients with dissociative PTSD had (also) a dissociative disorder. This suggests that when diagnosing and treating patients with PTSD, clinicians should be aware of co-morbid (symptoms of) dissociative disorders.

Keywords: PTSD, dissociative disorders, trauma, assessment, differential diagnosis

In the *Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5, American Psychiatric Association, 2013)*, the posttraumatic stress disorder (PTSD) diagnostic criteria have been revised (American Psychiatric Association, 2013). One of the

revisions concerned the addition of a dissociative subtype to the PTSD diagnosis. The PTSD dissociative subtype can be diagnosed when the full diagnostic criteria for PTSD are met and the patient exhibits additional persistent and recurrent dissociative

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symptoms of depersonalization (i.e., feeling as if oneself is not real) and derealization (i.e., feeling as if the world is not real). In *DSM-5*, PTSD is part of the new chapter “Trauma and Stress-Related Disorders,” whereas dissociative disorders (DDs) are still a separate category. Based on empirical evidence that experiences of depersonalization and derealization often co-occur, derealization has been included in the name and symptom structure of what previously was called depersonalization disorder and is now called depersonalization-derealization disorder (Spiegel et al., 2013).

Empirical Background

The inclusion of the dissociative subtype within the PTSD classification in the *DSM-5* is based on results of epidemiological, clinical and neurobiological research indicating a dissociative subtype of PTSD (D-PTSD) in both veteran and civilian samples (Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012). Lanius et al. (2010) presented clinical and neurobiological evidence that the dissociative subtype is characterized by overmodulation of affect, while nondissociative PTSD (ND-PTSD) is characterized by re-experiencing and hyperarousal symptoms, as a form of emotional undermodulation. Both types of affect modulation are mediated by different neural regions and structures in the brain and result in alternating symptom profiles in PTSD (Lanius et al., 2010). Recent studies provide further support for a difference in neural regions and structures in the brain between patients with D-PTSD and ND-PTSD (van Huijstee & Vermetten, 2018). Daniels, Frewen, Theberge, and Lanius (2016) reported a difference in volume of gray matter between patients with D-PTSD and ND-PTSD, with greater dissociation severity associated with greater volume in the right middle frontal gyrus. Furthermore, Nicholson et al. (2016) found different patterns of increased insula connectivity to amygdala complexes between D-PTSD patients and ND-PTSD patients. Patterns of brain activation and inhibition among D-PTSD are consistent with those found among patients with different DDs (e.g., depersonalization-derealization disorder, dissociative identity disorder [DID]). Furthermore, patients with PTSD showed both patterns of over- and undermodulation of affect, leading to respectively dissociative symptoms, like depersonalization and/or derealization, and symptoms of reexperiencing and hyperarousal as response to danger and threat (Spiegel et al., 2013).

Most of the research examining the presence of a dissociative subtype conducted latent profile analysis in various populations of adults with PTSD. Thus far, inconsistent findings on the number of classes or groups have been reported. Most studies reported the presence of three groups, namely (a) a moderate PTSD group, (b) a high PTSD and low dissociation group, and (c) a high PTSD and high dissociation group (e.g., Armour, Elklit, Lauterbach, & Elhai, 2014; Steuwe, Lanius, & Frewen, 2012; Wolf, Lunney, et al., 2012; Wolf, Miller, et al., 2012). Other studies reported a five-class solution, of which two “classes” endorse dissociative experiences, associated with severe or moderate PTSD symptom severity (Frewen, Brown, Steuwe, & Lanius, 2015) or a two-class solution representing an ND-PTSD class and a D-PTSD class (Hansen, Múllerová, Elklit, & Armour, 2016).

Differences in Clinical Profiles

The prevalence of D-PTSD ranged from 12% to 44% among PTSD patients across several studies (e.g., Armour et al., 2014; Hansen et al., 2016; Wolf, Lunney, et al., 2012). These studies consistently showed that D-PTSD is characterized by high scores on depersonalization and derealization symptoms. In addition, Wolf et al. (2017) found that other dissociative symptoms, such as gaps of awareness and loss of time, were not an indication of D-PTSD. Recently, it was suggested that symptoms of depersonalization might differentiate better between D-PTSD and ND-PTSD than symptoms of derealization and reductions of awareness (Hansen, Ross, & Armour, 2017). Furthermore, compared to ND-PTSD patients, D-PTSD patients showed a higher number of comorbid Axis I disorders, reported childhood abuse and neglect more often (Steuwe et al., 2012; Wolf, Miller, et al., 2012), had higher levels of comorbid avoidant personality disorder and borderline personality disorders (BPD; Wolf, Lunney, et al., 2012), had higher levels of depression, anxiety, hostility and sleeping difficulties (Armour et al., 2014) as well as reported increased suicidal ideation and behavior (Stein et al., 2013). Other research indicated that patients in the severe dissociative PTSD class more often reported histories of childhood (physical and/or sexual) abuse than patients with moderate PTSD and patients with severe PTSD without dissociative symptoms (Frewen et al., 2015). However, Wolf et al. (2017) found no significant differences between the D-PTSD class and ND-PTSD class on self-reports of childhood trauma or sexual trauma.

Differences in Treatment Response

One of the rationales for adding the dissociative subtype to the *DSM-5* criteria for PTSD, is that PTSD patients with higher dissociation levels may respond to treatment differently, compared to PTSD patients with lower dissociation levels (Lanius et al., 2012). But, so far, findings have been inconclusive. Several studies among early traumatized patients indicated that higher levels of dissociation are accompanied by higher levels of PTSD symptoms, while the level of dissociation does not seem to influence the course of PTSD symptoms during treatment (Dorrepal et al., 2012; Hagenaars, van Minnen, & Hoogduin, 2010). Another study found that higher levels of dissociation at the start of an early exposure intervention are associated with reduced treatment response (Price, Kearns, Houry, & Rothbaum, 2014). Studies that compared treatment efficacy for D-PTSD and ND-PTSD showed contrasting findings: one study showed a slightly smaller effect of treatment for D-PTSD (Wolf, Lunney, & Schnurr, 2016), whereas other studies, using samples of patients referred to treatment programs for PTSD, indicated no significant difference in treatment response (Burton, Feeny, Connell, & Zoellner, 2018; van Minnen et al., 2016; Zoet, Wagenmans, van Minnen, & de Jongh, 2018). Also, in a sample of veterans, the dissociative subtype of PTSD did not negatively affect treatment outcome (Haagen, van Rijn, Knipscheer, van der Aa, & Kleber, 2018). In addition, a study on treatment efficacy in PTSD patients showed that nonresponders (i.e., patients who did not reach a 30% decrease in total score on the Clinician-Administered PTSD Scale [CAPS]) had significantly higher levels of pretreatment derealization and depersonalization, reported more numbing symptoms and had a higher average total CAPS score at baseline than responders (Bae, Kim, & Park, 2016).

Moreover, based on the results of available studies, [Dutra and Wolf \(2017\)](#) argued that it would be premature to suggest that D-PTSD needs a different type or length of treatment.

Limitations of Previous Studies

Evaluating the studies described above, there are at least two limitations. First, comparing results is limited due to (a) the use of different measures for dissociative symptoms and (b) the inclusion of patients who did not meet the diagnostic criteria for PTSD in several studies ([Hansen et al., 2017](#)). Second, none of the studies on D-PTSD assessed comorbid DDs nor excluded patients with a DD. This could, however, be a major limitation, because prior research showed high comorbidity rates between PTSD and DDs (e.g., [Bliss, 1984](#); [Rodewald, Wilhelm-Göling, Emrich, Reddemann, & Gast, 2011](#)). It should be noted that these rates are based on studies on (severe) DD, with relatively small samples. The substantial comorbidity rate, the overlap between symptoms of D-PTSD and the depersonalization-derealization disorder, and the fact that brain activation and inhibition patterns are (partly) the same among D-PTSD and DD ([Spiegel et al., 2013](#)) raises the question to what extent the dissociative subtype of PTSD has symptomatic overlap with PTSD with a comorbid DD.

In addition, as shown in a recent meta-analysis ([Lyssenko et al., 2018](#)), dissociative symptoms are highly common in various mental disorders: the highest dissociation scores measured with the Dissociative Experiences Scale (DES) were found in patients with DID (mean score 48.7), followed by patients with PTSD (mean 28.6) and patients with BPD (mean 27.9). For other mental disorders (i.e., conversion disorder, substance-related disorders, eating disorders, schizophrenia, depressive and bipolar disorders), mean DES scores ranged from 14.8 to 25.6. Analysis of DES subscales showed that patients with schizophrenia and BPD had the highest scores on absorption, while patients with DDs had the highest scores on depersonalization and/or derealization. The mean DES score (25.1) among patients with a depersonalization/derealization disorder was numerically lower than mean scores among patients with BPD and PTSD.

Aim of the Current Study

To fill the knowledge gap, we studied D-PTSD as well as DD using DES and structured clinical interviews, respectively. To differentiate D-PTSD from PTSD with comorbid DD, a large population of patients with trauma-related symptoms and disorders is needed. Large samples of this specific population are scarce and highly intensive to assess in a reliable way. We had access to an extensively well diagnosed sample of adult patients with trauma-related and/or personality disorders. Presently, we aim to identify D-PTSD in this sample of treatment seeking patients and to examine the differences in clinical picture between patients without PTSD, patients with ND-PTSD and patients with D-PTSD. Can D-PTSD be differentiated from PTSD with comorbid DD, especially depersonalization disorder? Our aim is to acquire a better understanding of the differences and potential overlap between the DD and the dissociative subtype of PTSD. In addition to prior research on the characteristics of the dissociative subtype, we evaluated if patients with D-PTSD differ from patients with ND-

PTSD and from non-PTSD patients (with mainly personality disorders) in demographics, childhood trauma and neglect reports, psychological symptoms, and comorbid personality disorders.

Method

Participants

Participants were patients who sought treatment at a regular Dutch Mental Health Care center and who were consecutively referred to specific treatment programs for either trauma-related disorders or personality disorders. The only exclusion criterion was insufficient mastery of the Dutch language. Written informed consent was obtained after patients received an information letter and verbal explanation of the nature of the study. Of the 220 included patients, 150 participants completed the full study assessment. The group consisted of 116 women and 34 men (age range 18–68 year). For a more extensive description of the sample, we refer to [Wildschut, Langeland, Smit, and Draijer \(2014\)](#).

Measures

To assess the independent variables two instruments were used. The CAPS, a structural interview, assessing both frequency and intensity of PTSD symptoms, was used to assess PTSD ([Blake et al., 1995](#)). The CAPS has excellent reliability ($>.90$; [Weathers, Keane, & Davidson, 2001](#)). Because at the time of our assessments a specific instrument to diagnose D-PTSD was not available and the two additional items measuring depersonalization and derealization had not been included in the assessment of the CAPS, we used the DES to assess dissociative symptoms and to define an ND-PTSD group and a D-PTSD group, which has a good reliability of .84 ([Bernstein & Putnam, 1986](#)). The DES is a self-report questionnaire, which consists of 28 items rated on a VAS scale (range 0–100). Based on a review of previous studies on D-PTSD ([Lanius et al., 2012](#)) and DES-scores found in the latent class analysis on D-PTSD of [Steuwe et al. \(2012\)](#) we used a cut-off of $DES \geq 20$ to construct the D-PTSD group (based on the general mean score). A secondary follow-up analysis was conducted using the depersonalization/derealization subscale of the DES to construct the D-PTSD group, using the same cut-off score of ≥ 20 for the mean score on the subscale. This subscale consists of items 7, 11, 12, 13, 27, and 28 of the DES ([Bernstein & Putnam, 1986](#)).

To assess the dependent variables, we used structured interviews with good to excellent psychometric properties. DDs and severity of dissociative symptoms were assessed using the Structured Interview for *DSM-IV* Dissociative Disorders (SCID-D-R; [Steinberg, 2000](#)), with a reliability of .88. The SCID-D-R consists of five sections, namely amnesia, depersonalization, derealization, identity confusion and identity disturbance. Personality disorders were assessed using the Structural Interview for Disorders of *DSM-IV* Personality Disorders ([Pfohl, Blum, & Zimmerman, 1995](#)), a semistructured interview organized into different facets of the patients' life (e.g., emotions, interests and activities, and close relationships), with reliabilities of over .70 for most of the criteria ([Jane, Pagan, Turkheimer, Fiedler, & Oltmanns, 2006](#)). Furthermore, we used self-report questionnaires to assess psychological symptoms. The Inventory of Depressive Symptomatology for assessing depressive symptoms, which is a 28-item self-report ques-

tionnaire, with a reliability ranging from .92 to .94 (Rush, Gullion, Basco, Jarrett, & Trivedi, 1996). The Beck Anxiety Inventory was used to assess anxiety, a self-report questionnaire with 21 items and a reliability of .75 (Beck, Epstein, Brown, & Steer, 1988). The Symptom Checklist-90-Revised (Arrindell & Ettema, 1986), a self-report measurement with 90 items, was used to measure general psychopathology (total score), sleeping problems (subscale) and suicidality (one item). The Symptom Checklist-90-Revised has a reliability which ranged from .78 to .93 (Schmitz et al., 2000). We assessed histories of (childhood) trauma and neglect using the Structural Trauma Interview (STI; Draijer, 1989). This semistructured interview addresses several forms of adverse childhood experiences, like loss of primary caretakers, sexual abuse, neglect by caretakers based on parental dysfunction. Furthermore, we used the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) to assess emotional neglect, which assesses two dimensions of parenting: emotional warmth ("care") and control ("overprotection"), with reliability scores ranging from .74 to .95 (Parker, 1979).

Procedure

Data used in this study were collected (between November 2011 and March, 2014) as part of a larger study on evaluating a diagnostic model of the impact of trauma and neglect (see for more details Wildschut et al., 2014). The study protocol was approved by the Medical Ethics Committee of the Stichting Medisch-Ethische Toetsingscommissie Instellingen Geestelijke Gezondheidszorg (METiGG; Registration Number 11.121). Interviews were conducted by four psychologists, who were trained and supervised by an expert in assessing and diagnosing trauma-related and personality disorders as well as DDs. The questionnaires were mostly filled out by the patients at home but, if needed, the psychologist assisted. The interview assessments were videotaped provided the patient agreed to this and evaluated during supervision sessions. Fifteen patients (10% of the participants) agreed to be videotaped; they did not differ from the rest on demographics, like age, sex and marital status. The interrater agreement for the four interviews, which was high (ranging from 90% to 95%), was based upon the scores on all items and on the total score of the

interviews of the four psychologists of nine randomly selected videos. Furthermore, internal consistency as measured by Cronbach's alpha's for self-report questionnaires was also high (ranging from .82 to .99).

Data Analysis

Because our sample size did not allow more advanced statistical methods like latent-class analysis, we used explorative statistical methods to advance our knowledge about the new diagnostic subtype.

First, we compared the characteristics of the three patient groups, namely non-PTSD, D-PTSD and ND-PTSD, by testing differences between the groups on demographics, reports of childhood trauma and neglect using analysis of variance (ANOVA) for interval variables and chi-squares for nominal variables. Second, we tested differences in severity scores on the SCID-D-R and on the presence of a comorbid DD, especially the depersonalization disorder, between the three groups, using ANOVA with post hoc analysis for statistical significant differences. Furthermore, to test differences between the three groups on comorbid personality disorders and severity of psychological symptoms and suicidality, we again used ANOVA for interval variables and chi-squares for nominal variables. To correct for multiple testing, we used the Bonferroni post hoc analysis, for significant differences on interval variables, with a significance level of .004. For the chi-squares we used a significance level of .007 to correct for multiple testing. In addition, we reran our analyses using only the depersonalization/derealization subscale of the DES (Carlson & Putnam, 1993), for the DES is a general screener for dissociation and using the specific subscale for depersonalization/derealization could lead to different results. Furthermore, to get more information on the differentiation with DD, we reran the analyses for a third time, after excluding all patients with a DD.

Results

Demographics of patients are shown in Table 1. Forty-seven patients were married or cohabit with their partner, 28 patients

Table 1
Sociodemographic Variables and Childhood Trauma by Diagnostic Group

Variable	Non-PTSD (<i>n</i> = 66)	Nondissociative PTSD (<i>n</i> = 34)	Dissociative PTSD (<i>n</i> = 50)	χ^2 or <i>F</i> ^a	<i>p</i>
Sex (<i>n</i> , % women)	40 (61)	31 (94)	45 (90)	18.83	.000*
Age in years, <i>M</i> (<i>SD</i>)	34.11 (11.74)	31.00 (11.67)	36.60 (12.09)	2.27	.107
Educational level, <i>n</i> (% high)	22 (33)	12 (35)	16 (32)	17.94	.056
Marital status, <i>n</i> (% with partner)	18 (27)	10 (29)	19 (38)	10.35	.241
Employment status, <i>n</i> (% employed)	24 (36)	5 (15)	10 (20)	6.87	.032*
Number of children, <i>M</i> (<i>SD</i>)	.70 (1.09)	.94 (1.59)	1.10 (1.23)	1.48	.232
Loss of primary caretakers, <i>n</i> (%)	11 (17)	14 (41)	11 (22)	7.56	.023*
Witnessing violence between caretakers, <i>n</i> (%)	12 (18)	16 (47)	15 (30)	9.22	.010*
Neglect by caretakers, <i>n</i> (%)	42 (64)	29 (85)	46 (92)	14.70	.001*
Childhood physical abuse, <i>n</i> (%)	16 (24)	17 (50)	34 (68)	22.55	.000*
Childhood sexual abuse, <i>n</i> (%)	23 (35)	28 (82)	37 (74)	28.16	.000*
Other shocking events during childhood, <i>n</i> (%)	45 (68)	26 (76)	37 (74)	.91	.633

^a Chi-square for categorical variables, recognizable by *n* (%) in the first column, and ANOVA (*F*) for continuous variables, recognizable by *M* (*SD*) in the first column.

* *p* < .05.

were divorced, and 75 were unmarried/single. The majority of the patients reported that they had no children ($n = 88$) or that they were unemployed ($n = 111$).

Concerning the construction of the three comparison groups: 66 patients (44%) had no PTSD diagnosis (non-PTSD), 84 patients (56%) were diagnosed with PTSD, of whom 50 patients (33% of the total sample; 60% of patients with PTSD) were identified with the dissociative subtype (D-PTSD), leaving 34 patients (23% of the total sample; 40% of patients with PTSD) in the ND-PTSD group. While of the non-PTSD patients 24% met the criterion of being "dissociative" (≥ 20 on the DES).

The non-PTSD group contained significantly less women than the two groups with PTSD patients, and more patients were employed (see Table 1). Moreover, patients in both PTSD groups reported childhood trauma more often than the non-PTSD group (see Table 1).

Comorbidity With Dissociative Disorders and Personality Disorders

Comparisons of the prevalence of DDs and dissociative symptomatology between the three patient groups are shown in Table 2. In the D-PTSD group, more than half (54%) of the patients was diagnosed with a DD. The majority had a depersonalization disorder (26%), 22% was diagnosed with a DD-NOS. In the D-PTSD group, 86% of the patients had a (comorbid) personality disorder. In the ND-PTSD group 27% of the patients met criteria for a DD (depersonalization disorder 15%, DD not otherwise specified [DD-NOS] 12%). This group consisted primarily of patients with a (comorbid) personality disorder (88%). In both the D-PTSD group and the ND-PTSD group, BPD was most prevalent (40%

and 38%, respectively), after personality disorder not otherwise specified (PD-NOS; 64% and 62%, respectively). In the non-PTSD group only 8% of the patients were diagnosed with a DD, mainly depersonalization disorder (6%), and 77% was diagnosed with one or more personality disorders. In this latter group, following PD-NOS (56%), avoidant personality disorder was most prevalent (30%).

Comorbidity With Associated Symptoms

As shown in Table 2, the majority of significant differences was found between the non-PTSD group and the two PTSD groups. Compared to the non-PTSD group, the D-PTSD group reported significantly higher levels of general psychopathology, anxiety and depressive symptoms. Furthermore, the non-PTSD group suffered significantly less sleeping problems and, obviously, less PTSD symptoms than the two PTSD groups. In addition, the D-PTSD group reported significant more severe dissociative symptoms measured with the SCID-D-R than both the ND-PTSD and the non-PTSD group. Considering different symptom clusters, the D-PTSD group showed higher levels of amnesia than the non-PTSD group, higher levels of depersonalization than both the ND-PTSD and the non-PTSD group, and reported more derealization than the ND-PTSD group.

In addition, the comorbidity of (any) DD differed significantly between the three groups, $\chi^2(2) = 30.46$. There was a significant difference between the three groups on the presence of a DD-NOS, $\chi^2(2) = 14.16$, with a prevalence rate of 22% in the D-PTSD group, 12% in the ND-PTSD group and 2% in the non-PTSD group.

Table 2
Comparison of Three Diagnostic Groups on Psychopathology

Symptom	Non-PTSD ($n = 66$)	Nondissociative PTSD ($n = 34$)	Dissociative PTSD ($n = 50$)	χ^2 or F^a	p
General psychopathology, M (SD)	203.66 (64.06)	229.46 (56.95)	260.26 (54.96)	12.76	.000 ^{a,c}
Sleeping problems, M (SD)	7.07 (3.32)	10.08 (3.86)	10.65 (3.22)	15.90	.000 ^{a,b,c}
Suicidality, M (SD)	2.42 (1.52)	2.46 (1.45)	3.00 (1.47)	1.72	.184
Anxiety symptoms, M (SD)	16.27 (11.05)	23.76 (11.91)	29.90 (11.24)	20.89	.000 ^{a,c}
Depression symptoms, M (SD)	29.46 (13.99)	36.64 (10.32)	43.08 (10.58)	17.97	.000 ^{a,c}
Severity of PTSD symptoms, M (SD)	17.08 (20.92)	66.85 (12.43)	75.38 (17.48)	170.68	.000 ^{a,b,c}
Severity of dissociative symptoms (SCID-D-R), M (SD)	7.95 (2.55)	9.91 (3.37)	12.98 (3.66)	36.36	.000 ^{a,c,d}
Amnesia symptom cluster of SCID-D-R, M (SD)	1.39 (.80)	2.06 (1.23)	2.66 (1.17)	21.27	.000 ^{a,c}
Depersonalization symptom cluster of SCID-D-R, M (SD)	1.88 (1.07)	2.44 (1.33)	3.40 (.99)	26.76	.000 ^{a,c,d}
Derealization symptom cluster of SCID-D-R, M (SD)	1.26 (.75)	1.44 (.82)	2.44 (1.23)	23.46	.000 ^{a,c,d}
Identity confusion symptom cluster of SCID-D-R, M (SD)	2.36 (1.29)	2.76 (1.33)	3.08 (1.21)	4.55	.012
Identity disturbance symptom cluster of SCID-D-R, M (SD)	1.06 (.29)	1.21 (.54)	1.40 (.83)	4.88	.009
Comorbidity of (any) dissociative disorder, n (%)	5 (8)	10 (28)	27 (54)	30.46	.000 ^a
Depersonalization disorder, n (%)	4 (6)	5 (15)	13 (26)	9.19	.010
Dissociative amnesia disorder, n (%)	—	1 (3)	—	2.99	.224
Dissociative fugue disorder, n (%)	—	—	1 (2)	2.21	.331
Dissociative identity disorder, n (%)	—	—	2 (4)	4.45	.108
Dissociative disorder not otherwise specified, n (%)	1 (2)	4 (12)	11 (22)	14.16	.001 ^a
Comorbidity of (any) personality disorder, n (%)	51 (77)	30 (88)	43 (86)	2.46	.292
Number of personality disorders, M (SD)	1.68 (1.49)	2.08 (1.52)	2.18 (1.41)	1.85	.160

^a Chi-square for categorical variables, recognizable by n (%) in the first column, and ANOVA (F) for continuous variables, recognizable by M (SD) in the first column. ^b Significant difference between non-PTSD and ND-PTSD group (based on post hoc analysis). ^c Significant difference between non-PTSD and D-PTSD group (based on post hoc analysis). ^d Significant difference between ND-PTSD and D-PTSD group (based on post hoc analysis).

* $p < .004$ for F , corrected for multiple testing ($p = .05/12 = .004$). ** $p < .002$ for χ^2 , corrected for multiple testing ($p = .05/7 = .007$).

Depersonalization/Derealization Subscale

What does the clinical picture look like when we excluded the DD-patients from the PTSD groups? Reanalysis of data after excluding patients with a comorbid DD or after dividing the D-PTSD group in patients with a DD and patients without a DD gave similar results. Also, regarding the reanalysis using the depersonalization/derealization subscale of the DES, results indicated that 66 patients were diagnosed with ND-PTSD (44% of the total sample; 79% of patients with PTSD) and 18 patients could be diagnosed with D-PTSD (12% of the total sample and 21% of patients with PTSD). Of the 18 patients with D-PTSD, 12 had a comorbid DD (66%), namely a depersonalization disorder ($n = 5$), a DD NOS ($n = 5$) and DID ($n = 2$). Although the prevalence of D-PTSD using the depersonalization/derealization subscale was lower than when using the total DES-score, the significant differences between ND-PTSD and D-PTSD patients on symptomatology remained the same, except for two symptom clusters of the SCID-D-R, namely the derealization cluster and the identity disturbance cluster. Compared to ND-PTSD patients, D-PTSD patients suffered more from derealization symptoms and symptoms of identity disturbance, but not from depersonalization symptoms.

Discussion

A major finding of this study based on extensive assessment of dissociative pathology using structural interviews, was the high comorbidity with DDs in the PTSD dissociative subtype group: 54% of the D-PTSD group met criteria for one or more DDs as measured with a structured clinical interview.

A question raised by these finding was this: "Would the differences between ND-PTSD and D-PTSD last if we exclude patients with a comorbid DD?" However, when we excluded patients with a comorbid DD in our study, all results remained the same. Furthermore, when comparing D-PTSD patients with a DD and D-PTSD patients without a DD, there were no significant differences on symptomatology. In other words, D-PTSD patients with a DD and D-PTSD patients without a DD reported the same symptomatology and showed the same differences when compared to patients without PTSD and patients with a nondissociative PTSD.

On the one hand the lack of differences between D-PTSD patients with a DD and D-PTSD patients without a DD could be interpreted that using only a screening instrument like the DES would be sufficient to assess dissociative symptomatology in PTSD patients. On the other hand, however, the finding that more than 25% of the patients in the ND-PTSD group, and even 8% in the non-PTSD group, were also diagnosed with a DD, would plead for the recognition of the clinical importance of assessing DDs and for the use of semistructured interviews to do so.

Our study both confirmed and contradicted findings on D-PTSD found in previous studies. In accordance with the literature review of Lanius et al. (2012), we found that the level of symptoms of both depersonalization and derealization, as measured with the SCID-D-R, are significantly higher in the D-PTSD group compared to the ND-PTSD group and the non-PTSD group. But considering related symptoms, our study contradicted the findings of Armour et al. (2014), who found higher levels of anxiety, depression symptoms and sleeping problems in the D-PTSD group compared to the ND-PTSD group. We only found significantly

lower levels of general psychopathology, anxiety, depression symptoms and sleeping problems in the non-PTSD group as compared to the ND-PTSD group and the D-PTSD group, but no significant differences between the ND-PTSD group and the D-PTSD group. Furthermore, like Wolf et al. (2017), we could not confirm that patients with D-PTSD report histories of childhood trauma more often, as has been stated previously by several researchers (Frewen et al., 2015; Steuwe et al., 2012; Wolf, Miller, et al., 2012). There were significant differences on some childhood trauma variables, however, the difference is mainly found in lower scores in the non-PTSD group. This inconsistency with previous research could be accounted for by the sample we used, which consisted of relatively severe (complex) patients, as well as by the fact that we used a structured clinical interview to assess reports of childhood trauma, while the referred studies all used self-report measures. Furthermore, these self-report measures differ in how they describe and classify traumatic experiences. Also, we did not find any differences on (comorbid) personality disorders and suicidality between the three groups.

The prevalence rate of D-PTSD in our study was 33% of the total sample and 60% of all patients with a PTSD diagnosis. According to Hansen et al. (2017), prevalence rates of D-PTSD ranged from 6% in a sample of military veterans and their intimate partners, to 44% in a sample of victims of incest. But they also described that several of the studies included in their review, did not necessarily meet the diagnostic criteria for PTSD, therefore "it could be expected that studies with higher estimated PTSD prevalence rates would find more prevalent dissociative PTSD profiles" (p. 66). In addition to the sample of relatively severe (complex) patients used, the relatively high prevalence rate of PTSD (56%) in our sample could explain our prevalence rate of D-PTSD. Furthermore, the fact that studies on D-PTSD not necessarily diagnosed PTSD before the subtype was assessed, implicates that results of these studies are hard to compare with other studies on the dissociative subtype. For example, if we had not differentiated between patients with and without a PTSD diagnosis, 24% of the patients in the non-PTSD group would have been identified as belonging to the D-PTSD group (mean DES score ≥ 20).

Our study has some limitations. The size of our sample did not allow us to perform a latent class analysis to identify subgroups among PTSD patients statistically. Furthermore, although the inclusion of D-PTSD in the *DSM-5* has stimulated the development of more rigorous instruments, a specific screener or diagnostic instrument for D-PTSD was not available at the time our sample was assessed. To be able to identify D-PTSD, similar to other studies on this subtype, we relied on a cut-off score of the DES (≥ 20). The use of the DES might not be ideal as it is a more general than specific measure of depersonalization and derealization symptoms such as the Cambridge Depersonalization Scale (Sierra & Berrios, 2000). However, with the use of the data of a larger study in which the data collection started before the publication of *DSM-5*, we choose the DES, using the cut-off score described in the D-PTSD literature review of Lanius et al. (2012). Furthermore, our reanalyses using the depersonalization/derealization subscale of the DES did not yield different results, providing further support for using the DES general mean score. Recently, Ford et al. (2015); Frewen et al. (2015) and Wolf et al. (2017) developed scales to assess *DSM-5* D-PTSD and published the

initial evaluations. These instruments still need additional research to validate them.

The addition of D-PTSD in *DSM-5* has increased the interest in dissociation of both researchers and clinicians working in the field of trauma-related disorders. The creation of a dissociative subtype of PTSD thus reflects an important step in formally recognizing the clinical and empirical importance of the assessment of DDs and might contribute to a better recognition and treatment of dissociative symptoms and DDs.

Our study is the first to date to address the symptomatic overlap between D-PTSD and DDs, by including the assessment of DDs and comparing D-PTSD patient with and without a comorbid DD. We recommend that future research on D-PTSD includes assessing DDs. Furthermore, we recommend the use of structured clinical interviews, next to well-validated self-report questionnaires. This could contribute to a better understanding of D-PTSD and how it differs from DDs, and hopefully lead to more specified and accurate diagnostic criteria.

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