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## The course of (comorbid) trauma-related, dissociative and personality disorders: two year follow up of the Friesland study cohort

Sanne Swart <sup>a</sup>, Marleen Wildschut<sup>a</sup>, Nel Draijer<sup>b</sup>, Willemien Langeland<sup>b</sup>, Adriaan W. Hoogendoorn <sup>b</sup> and Jan H. Smit <sup>b</sup>

<sup>a</sup>FACT, GGZ Friesland, Drachten, The Netherlands; <sup>b</sup>Amsterdam UMC, Vrije Universiteit, Psychiatry, Amsterdam Public Health, Amsterdam, The Netherlands

### ABSTRACT

**Background:** There is substantial comorbidity between trauma-related disorders (TRDs), dissociative disorders (DDs) and personality disorders (PDs), especially in patients who report childhood trauma and emotional neglect. However, little is known about the course of these comorbid disorders, despite the fact that this could be of great clinical importance in guiding treatment.

**Objective:** This study describes the two-year course of a cohort of patients with (comorbid) TRDs, DDs and PDs and aims to identify possible predictors of course. Possible gender differences will be described, as well as features of non-respondents.

**Method:** Patients (N = 150) referred to either a trauma treatment program or a PD treatment program were assessed using five structured clinical interviews for diagnosing TRDs, DDs, PDs and trauma histories. Three self-report questionnaires were used to assess general psychopathology, dissociative symptoms and personality pathology in a more dimensional way. Data on demographics and received treatment were obtained using psychiatric records. We described the cohort after a two-year follow-up and used t-tests or chi-square to test possible differences between respondents and non-respondents and between women and men. We used regression analysis to identify possible course predictors.

**Results:** A total of 85 (56.7%) of the original 150 patients participated in the follow-up measurement. Female respondents reported more sexual abuse than female non-respondents. Six patients (4.0%; all women) died because of suicide. Levels of psychopathology significantly declined during the follow-up period, but only among women. Gender was the only significant predictor of change.

**Conclusions:** Comorbidity between TRDs, DDs and PDs was more the rule than the exception, pleading for a more dimensional and integrative view on pathology following childhood trauma and emotional neglect. Courses significantly differed between men and women, advocating more attention to gender in treatment and future research.

### El curso de trastornos relacionados con el trauma, disociativos y de la personalidad (comórbidos): seguimiento a los dos años del estudio de cohorte de Frisia (Friesland)

**Antecedentes:** existe una comorbilidad sustancial entre trastornos relacionados con el trauma (TRDs por sus siglas en inglés), trastornos disociativos (DDs por sus siglas en inglés) y trastornos de personalidad (PDs por sus siglas en inglés), especialmente en pacientes que reportan trauma infantil y negligencia emocional. Sin embargo, se conoce muy poco sobre el curso de estos trastornos comórbidos, pese al hecho de que esto pudiese ser de gran importancia clínica para guiar el tratamiento.

**Objetivo:** Este estudio describe el curso de dos años de una cohorte de pacientes con TRDs, DDs, y PDs (comórbidos) y tiene como objetivo identificar posibles predictores de curso. Se describirán posibles diferencias de género, así como características de los no encuestados.

**Métodos:** Pacientes (N=150) que fueron referidos ya sea a un centro de tratamiento de trauma o a un programa de tratamiento para trastorno de personalidad fueron evaluados usando cinco entrevistas clínicas estructuradas para diagnosticar TRDs, DDs, PDs e historias de trauma. Tres cuestionarios de auto-reporte fueron usados para evaluar psicopatología general, síntomas disociativos y patología de la personalidad de una forma más dimensional. Se obtuvo información sobre la demografía y el tratamiento recibido usando registros psiquiátricos. Describimos la cohorte después de un seguimiento de dos años y usamos Test-T o chi cuadrado para evaluar posibles diferencias entre encuestados y no encuestados, así como entre hombres y mujeres. Usamos análisis de regresión para identificar posibles predictores de curso.

**Resultados:** Un total de 85 (56.7%) de los 150 pacientes originales participaron en las mediciones de seguimiento. Las encuestadas femeninas reportaron más abuso sexual que las mujeres no encuestadas. Seis pacientes (4%, todas mujeres) fallecieron por suicidio. Los

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### KEYWORDS

PTSD; trauma-related disorders; dissociative disorders; personality disorders; course; comorbidity; gender

### PALABRAS CLAVE

Curso; género; trastornos relacionados con el trauma; trastornos de personalidad; TEPT; trastornos disociativos; comorbilidad

### 关键词

病程; 性别; 创伤相关障碍; 人格障碍; PTSD; 解离障碍; 并发症

### HIGHLIGHTS

- Trauma diagnosis and dissociative disorders are not equally distributed among gender.
- During the two-year follow-up period, there was a significant decline in general psychopathology, dissociative symptoms and personality psychopathology in female patients with (comorbid) TRDs, DDs and PDs.
- There was a suicide rate in our patient cohort of 4.0% within the two-year follow-up period.

niveles de psicopatología declinaron significativamente durante el período de seguimiento, pero solo entre mujeres. El género fue el único predictor de cambio.

**Conclusiones:** la comorbilidad entre TRDs, DDs y PDs fue más la regla que la excepción, haciendo necesaria una visión más integrativa y dimensional de la patología posterior al trauma infantil y la negligencia emocional. Los cursos difieren significativamente entre hombres y mujeres, advocating por más atención al género en el tratamiento y futura investigación.

### 创伤相关障碍、解离障碍与人格障碍（并发症）的病程：对弗里斯兰省研究队列的两年随访

**背景:** 创伤相关障碍 (TRDs), 解离障碍 (DDs) 和人格障碍 (PDs) 之间有大量共病, 尤其是在报告有童年创伤和情感忽略的患者中。然而, 对这些并发症的病程知之甚少, 尽管这对于指导治疗可能具有重要的临床意义。

**目标:** 本研究对一组 (并发) TRDs, DDs 和 PDs 患者的两年病程进行了描述, 旨在确定可能的病程预测因素。将描述可能的性别差异以及未受访者的特征。

**方法:** 对 150 名参与创伤治疗程序或 PD 治疗程序的患者, 使用五次结构化临床访谈就其诊断 TRDs, DDs, PDs 和创伤史进行了评估。使用三份自评问卷对一般的精神病理, 分离症状和人格病理进行了更多维的评估。使用精神病学档案获取了相关人口统计学和所受治疗的数据。两年随访后, 我们对该队列进行描述, 并使用 t 检验或卡方检验考查了受访者与未受访者之间以及男女之间的可能差异。我们使用回归分析来确定可能的病程预测因素。

**结果:** 最初的 150 名患者中有 85 名 (56.7%) 参与了随访测量。女性受访者比女性未受访者报告了更多的性虐待。6 名患者 (4.0%; 均为女性) 自杀身亡。在随访期间, 精神病理学水平显著下降, 但仅限于女性中。性别是变化的唯一显著预测因子。

**结论:** 与其说 TRDs, DDs 和 PDs 共病是一个例外, 倒不如说更是一种常规现象, 希望对于童年创伤和情感忽略后病理有更全面综合的观点。男女病程差异明显, 提倡在治疗和未来研究中更多去关注性别。

Research on trauma-related disorders (TRDs; i.e. (complex) posttraumatic stress disorders), dissociative disorders (DDs) and personality disorders (PDs) shows that in many cases there is a chronic course. Insight in the long-term course of these disorders is of great clinical importance. It may guide treatment, and may help to inform patients. In addition, comorbidity among TRDs, DDs and PDs is extensive. For instance, in clinical samples, half of the patients with borderline personality disorder (BPD) meet diagnostic criteria for posttraumatic stress disorder (PTSD; Harned, Rizvi, & Linehan, 2010; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2004) and more than a third (35%) of patients with PTSD meet diagnostic criteria for PD (Friborg, Martinussen, Kaiser, Øvergård, & Rosenvinge, 2013). Despite this, most studies on (long-term) course of TRDs, DDs and PDs tend to focus on a single disorder or two different disorders at the time, and some studies even exclude patients with comorbid disorders. Furthermore, findings of studies on the course are hard to compare, because the measured time span, of course, varies from some months to over ten years. However, studying the course of (comorbidity between and within) the categories of TRDs, DDs and PDs might contribute to the better understanding course of (comorbidity patterns of) these disorders, in particular in patients reporting childhood trauma and/or neglect.

In the present study, we describe the two-year course of (comorbid) TRDs, DDs and PDs in a cohort of patients referred to a specialized mental health facility. This study is part of a larger project on

survivors of early childhood trauma and emotional neglect (Wildschut, Langeland, Smit, & Draijer, 2014). At baseline comorbid psychiatric disorders of patients who were referred to treatment for PDs and patients who were referred to treatment for TRDs or DDs had been assessed. The baseline data showed that, independently of which diagnosis-driven treatment program patients were referred to, both patient groups suffered equally from TRDs, DDs and PDs (Wildschut, Swart, Langeland, Smit, & Draijer, 2018a). Findings also indicated that PTSD, Complex PTSD (CPTSD) and DDs may all be conceived as a TRD dimension, with ascending severity associated with reported trauma severity (Wildschut, Swart, Langeland, Smit, & Draijer, 2018b). This latter finding pleads for a more integrative view on the psychopathology and treatment of patients who report childhood trauma.

Regarding predictors of the course of TRDs, DDs and PDs, current knowledge is rather limited and fragmented. A meta-analysis of course predictors of PTSD indicated that female gender, belonging to a minority race, childhood trauma, trauma severity, severe initial reactions to the trauma, lack of social support and comorbidity with other mental health problems are associated with a chronic course (Steinert, Hofmann, Leichsenring, & Kruse, 2015). Furthermore, a literature review of combat-related PTSD, which included studies with only men or a great majority of men (>90%), showed that symptoms of hyperarousal, re-experiencing and pre-deployment dissociation are clinically significant and prognostic for the course of PTSD (Able & Benedek,

2019). Several other studies with mainly female patients with PTSD or CPTSD, with follow-up periods of 6 months to 1 year, indicated that patients with high levels of dissociation, combined with high levels of PTSD, need more time to improve compared to those lower in dissociation (Bae, Kim, & Park, 2016; Dorrepaal et al., 2012; Hageñaars, van Minnen, & Hoogduin, 2010; Jepsen, Langeland, Sexton, & Heir, 2014). In contrast, 2-year outcomes of a longitudinal study of mainly female (88.3%) patients with dissociative identity disorder (DID) or other complex DDs, who followed an online educational program for the management of DD and PTSD symptoms, indicated that patients with high initial dissociative symptoms showed the strongest improvements in emotion regulation, PTSD symptoms and dissociation (Brand et al., 2019).

The majority of studies on the course of PDs have focused on BPD. A recent study of Barnicot and Crawford (2018) on patients with BPD (72.2% female), of which 74.4% had a comorbid PTSD, showed that this comorbid diagnosis had no negative influence on the one-year course of BPD. However, less improvement in PTSD symptoms at one-year follow-up was associated with continued self-harming behaviour. Two large longitudinal studies, with, respectively, a two-year (75.0% female) and a ten-year (80.3% female) follow-up period, showed that a history of trauma and neglect predicted a more negative course of BPD (Gunderson et al., 2006; Skodol et al., 2005; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006). Also, more severe personality psychopathology, a lower score on the Global Assessment Functioning (GAF; Gunderson et al., 2006), a history of childhood sexual abuse, psychiatric hospitalization, comorbid PTSD and anxious cluster PDs had a negative influence on the course and time to remission of BPD (Zanarini et al., 2006).

Based on prior findings on (predictors of) course of TRDs, DDs and/or PDs, we can conclude that results are far from clear, sometimes contradicting and, by excluding patients and using different follow-up periods, hard to compare. In the present study, we aim to describe the (predictors of) two-year course of (comorbid) TRDs, DDs and PDs in patients in treatment. Furthermore, we will make a detailed comparison of characteristics of respondents versus non-respondents. In our analysis, we will pay attention to possible gender differences.

## 1. Method

### 1.1. Participants

Data came from two assessment waves over 2-years of two patient groups: one group of patients consecutively referred to a TRD treatment program, treating

specifically adult survivors of early childhood trauma with (C)PTSD and/or DDs, and one group of patients consecutively referred to a PD treatment program. Of the patients in the TRD treatment program, 95.9% reported severe childhood trauma, versus 54.4% of patients in the PD treatment program (see for more specific details Wildschut et al., 2018a). Insufficient mastery of the Dutch language was the only exclusion criterion. Data were collected between November 2011 and March 2014 (baseline) and between February 2014 and August 2016 (follow-up). At baseline, of the 220 patients who had been invited to participate, 70 patients refused, resulting in a sample of 150 patients (77.3% women). There were no significant differences on demographic variables between respondents and non-respondents (see for more specific details, Wildschut et al., 2018a). All participants who completed the baseline assessment were invited to participate in the two-year follow-up assessment.

This study was approved by the Medical Ethics Committee of the Regionale Toetsingscommissie Patiëntgebonden Onderzoek (RTPO, registration number NL47054.099.14). All patients gave written informed consent before participating in the study.

### 1.2. Measures

Data derived from repeated assessments of the same instruments at baseline and follow-up were used. Demographics were obtained using psychiatric records. For the valid assessment of TRDs, DDs and PDs (semi-)structured interviews were used. The Clinician Administered PTSD Scale (CAPS) was used to assess PTSD symptoms and diagnosis (Blake et al., 1995). The CAPS has excellent reliability (>.90; Weathers, Keane, & Davidson, 2001). Scores on the CAPS ranged from 0 to 80, with a cut-off score of 45 to diagnose PTSD. CPTSD was assessed using the Structured Interview for Disorders of Extreme Stress (SIDES), which has a reliability of .81 (Pelcovitz et al., 1997). The SIDES measures 27 criteria, arranged into 7 categories: regulation of affect and impulses, attention or consciousness, self-perception, relations with others, somatization and systems of meaning. To assess the presence and severity of DDs, the Structured Interview for DSM-IV Dissociative Disorders Revised (SCID-D-R) was used (Steinberg, 2000). This interview has a reliability of .88 (Steinberg, 2000). The SCID-D-R measures five core symptoms of dissociation, namely: amnesia, depersonalization, derealization, identity confusion and identity alteration. For the assessment of (symptoms of) PDs, we used the Structured Interview of DSM-IV Personality Disorders (SIDP-IV; Pfohl, Blum, & Zimmerman, 1995), in which PD criteria are organized into 10 sections corresponding to different

facets of a patient's life, e.g. work, relationships, emotions, self-perception. The reliability of the SIDP-IV for patients with PD is .66 (de Jong, Derks, van Oel, & Rinne, 1996). Furthermore, a dimensional approach to personality pathology was also included by assessing the Severity Indices of Personality Problems (SIPP-118), which has a reliability of .70 (Verheul et al., 2008). The SIPP-118 is a self-report questionnaire, which contains five domains of (mal) adaptive personality functioning, namely Self-control, Identity integration, Relational capacities, Responsibility and Social concordance. The 118 items are rated on a 4-point Likert scale, covering the last 3 months. T-scores, i.e. scores based on a normal distribution with a mean of 50 and a standard deviation of 10 (de Beurs, 2010), are used to calculate scores on the domains, and weighted means are used to calculate averages, with higher scores meaning more adaptive functioning (Verheul et al., 2008).

We used the Symptom Checklist-90-Revised (SCL-90-R; Arrindell & Ettema, 1986) to assess general psychopathology (Arrindell et al., 2003). The SCL-90-R consists of 90 items, and contains 9 subscales. The reliability of the SCL-90-R ranged from .78 to .93 (Schmitz et al., 2000). Furthermore, we assessed dissociative symptoms with the Dissociative Experiences Scale (DES), which has a good reliability of .84 (Bernstein & Putnam, 1986). The DES consists of 28 items, which are rated on a VAS scale (range 0–100). For the measurement of trauma history and neglect we used a semi-structured interview, the Structured Trauma Interview (STI; Draijer, 1989), which measures the loss of primary caretakers, witnessing violence between caretakers, neglect by caretakers, and physical abuse, sexual abuse and other shocking events in childhood as well as in adulthood. Outcomes range from 'absent' to 'severe, depending on the age of onset, frequency, number of perpetrators and if the trauma occurred within or outside the family, leading to a severity score of reported trauma before and after the age of 16, ranging from absent to severe. The construct validity of the STI is shown to be good by comparison with other instruments for the assessment of childhood trauma (Langeland, Draijer, & van den Brink, 2003).

Data on received treatment inside GGZ Friesland were collected from the patient record system. At follow-up, patients filled in an additional form to obtain data on received treatment outside GGZ Friesland, which contained questions on type and duration of treatment(s) received, number and duration of hospitalization and the use of medication (e.g. type, dose and duration) prescribed outside GGZ Friesland, in the two-year period after the baseline assessment.

Inter-rater agreement for the interviews (STI, CAPS, SIDES, SCID-D-R and SIDP-IV) was high, ranging from 90% to 95%. Fleiss' kappa, a measure to evaluate inter-rater reliability in the case of more than two raters, indicated substantial agreement for CAPS (.81), SCID-D-R (.67) and SIDES (.61), moderate agreement for STI (.46) and fair agreement for SIDP-IV (.28). Furthermore, internal consistency for self-report questionnaires was also high, with Cronbach's alpha ranging from .78 to .92 (see for more specific details Wildschut et al., 2018a).

### 1.3. Procedure

All patients who completed the baseline assessment were approached by the principal investigator to invite them to participate in the follow-up study and to provide information about the study. When patients agreed to participate, written informed consent was obtained and appointments were scheduled for follow-up assessment. Mostly, the assessment of all interviews (i.e. STI, CAPS, SIDES, SCID-D-R and SIDP-IV) was divided over two or three sessions per patient. The majority of patients filled in the questionnaires between these sessions. Interviews were administered by four trained female psychologists who received supervision. Interviews were videotaped and evaluated during supervision if patients agreed to this.

### 1.4. Data analysis

First, we described characteristics of the patient cohort after a two-year follow-up. Potential differences between participants who completed the follow-up assessment (hereafter: respondents) and non-respondents were tested using t-tests or chi-square. In addition to sociodemographic characteristics, we also evaluated possible differences in the clinical profiles of non-respondents. In describing the presence of TRDs and DDs, we used a 'trauma-diagnosis severity score', which we had constructed previously (Wildschut et al., 2018b). This ordinal scale (0 = no PTSD, 1 = PTSD, 2 = CPTSD, 3 = Dissociative disorder not otherwise specified [DDNOS], 4 = DID) is based on the outcomes of the structured interviews CAPS, SIDES and SCID-D, in which patients with comorbidity are classified according to their most severe disorder. We used Fishers exact-test to test possible gender differences in the trauma-diagnosis severity score. Subsequently, we tested the course of general psychopathology (based on SCL-90-R), dissociative symptoms (based on DES) and personality pathology (based on SIPP-118) using t-tests. In addition, we calculated Cohen's d, using the baseline standard deviations to standardize effect sizes. Finally, we described the two-year course with

regression models, using the change score of the general psychopathology score, based on SCL-90-R, as dependent variable, and demographics, the severity of reported trauma in childhood and adulthood, defined as before and after the age of 16 (STI), dissociative symptoms (DES), the severity of personality pathology (SIPP-188), total minutes of received therapy and total days of hospitalization as possible predictors of course. We choose regression analysis based on change scores instead of analysis of covariance (ANCOVA), because our study is observational and ANCOVA is more appropriate to analyse randomized controlled trial data (Fitzmaurice, Laird, & Ware, 2004).

## 2. Results

### 2.1. Demographics

Of the 150 patients who had completed baseline assessment, 85 (56.7%) fully completed follow-up assessment. At follow-up, the majority of respondents was female ( $n = 61$ ; 71.8%), unmarried ( $n = 45$ ; 52.9%), childless ( $n = 51$ ; 60.0%), unemployed ( $n = 64$ ; 75.3%), and had received secondary vocational education ( $n = 50$ ; 58.8%). Age ranged from 20 to 70, with a mean of 36.48 years ( $SD = 12.53$ ).

### 2.2. Non-respondents

Baseline demographic characteristics of non-respondents ( $n = 65$ ) showed the same pattern as respondents, with the majority being female ( $n = 54$ ; 83.1%), unmarried ( $n = 26$ ; 40.0%), unemployed ( $n = 47$ ; 72.3%), had received secondary vocational education ( $n = 27$ ; 41.5%). Furthermore, age ranged between 18 and 57, with a mean of 34.14 years ( $SD = 11.22$ ). There were no significant differences on demographics between respondents and non-respondents, except that groups reported different numbers of children ( $\chi^2(6) = 12.75, p = .047$ ).

Of the 65 non-respondents, 50 refused to participate at the follow-up assessment for reasons such as somatic illness, hospitalization, personal circumstances, like the sudden death of a relative, or not wanting to be confronted with their histories. Another nine patients could not be contacted, despite multiple attempts, mostly due to change of addresses or phone numbers. One patients had emigrated. Furthermore, six patients died by suicide during the follow-up period. This is a strikingly high number, i.e. 4.0% of the complete cohort and 9.2% of the non-respondents. These patients were diagnosed with both TRD and/or DD and PD: four had PTSD, one had CPTSD and one had CPTSD as well as DD NOS; four patients had one PD and two patients were diagnosed with three PDs. Five of the six suicides

were cases that involved medication overdose (one of them in combination with suffocation, another one in combination with alcohol overdose), one suicide was a case of self-poisoning. Furthermore, to our knowledge, so far there has been at least one other death by suicide. All patients who died were women.

When looking at the clinical profile of the 65 non-respondents at baseline, 17 (26.2%) had PTSD, 15 (23.1%) had CPTSD and 5 (7.7%) were diagnosed with DD. With respect to PDs, 51 patients (78.5%) were diagnosed with one or more PDs. Considering reported trauma before the age of 16, 49.2% of them reported physical abuse, 55.4% reported sexual abuse, 69.2% reported other shocking events and 83.1% reported neglect by one or both caregivers. There were no significant differences between respondents and non-respondents in their clinical profiles, except that, compared to female non-respondents, female respondents reported higher rates of childhood sexual abuse. Furthermore, a significant difference in the distribution of the trauma-diagnosis severity score was found between female respondents and female non-respondents, but not between male respondents and male non-respondents (see supplementary tables 1 and 2). Female respondents were more often diagnosed with DD than female non-respondents, whereas female non-respondents were less often diagnosed with PTSD diagnosis than female respondents.

### 2.3. Psychiatric treatment during follow-up

During the follow-up period, patients received a mean of 13821.54 min (230.36 h) of treatment at GGZ Friesland, with a range of 385 to 46783 min and a median of 11661 min (194.35 h). Moreover, 27 patients (31.8%) were hospitalized for one or more days during the follow-up period. Days of hospitalization ranged from 0 to 312 days, with a mean of 37.36 days and a median of 0 days. There were no gender differences in received minutes of treatment or days of hospitalization.

In more detail, 16.5% of all patients received outpatient trauma-focused therapy and 14.1% received inpatient trauma-focused therapy. Of the patients who reported severe childhood trauma on the STI, 40.4% received trauma-focused therapy at GGZ Friesland during the follow-up period. Inpatient trauma-focused therapy is based on PTSD exposure therapy, whereas outpatient trauma-focused therapy is mainly based on DD phase-oriented therapy, focusing on stabilization and/or trauma-processing. Furthermore, with respect to personality-focused therapy, 45.9% received outpatient therapy, 44.7% received therapy based on partial inpatient therapy and 15.3% received inpatient therapy. Outpatient therapy was based on dialectical behaviour therapy (DBT) or cognitive behavioural therapy (CBT) and

(partial) inpatient therapies were based on mentalization-based therapy (MBT). There were no significant gender differences in treatment setting (i.e. inpatient, outpatient or treatment focus). Note that during the two-year follow-up period, patients may have received multiple therapies, in some cases even more than three different types of therapies. Seventeen patients reported that they had received psychiatric treatment outside GGZ Friesland. Seven patients received outpatient care, with a mean of 10.6 therapy-sessions (range 2 to 36 sessions). Furthermore, two patients received treatment based on partial hospitalization, one reporting to have received just 1 half-day session and the other reporting 36 half-day sessions. Also, nine patients were hospitalized or received inpatient treatment, ranging from 1 to 60 days, with a mean of 19.6 days (four patients did not report the number of days of hospitalization).

#### 2.4. Course of a diagnosis

Table 1 shows a crosstabulation of trauma-diagnosis, based on the trauma-diagnosis severity score at baseline versus follow-up (which includes DDs as a trauma-related diagnosis), indicating that of the patients who (still) had a trauma-related diagnosis at follow-up, the majority had PTSD (n = 16; 18.8%) or CPTSD (n = 10; 11.8%). However, more than half of the patients (70% female) did not have a trauma-related diagnosis (anymore) at follow-up (n = 50; 58.8%). The (bold) diagonal of the table shows patients who remained 'stable' in terms of their trauma-diagnosis severity score between baseline and follow-up (n = 49; 57.6%). The lower half of the diagonal shows patients who 'improved' (n = 28; 32.9%), whereas the upper half of the diagonal shows patients who 'worsened' (n = 8; 9.4%) on the trauma-diagnosis severity score at follow-up compared to baseline. In addition, in Table 2 the crosstabulation of PDs are shown, with again a stable diagonal (n = 26; 30.6%), an improved lower half (n = 53; 62.4%) and a worsened upper half (n = 6; 7.1%). Here, also more than half of the patients (79.1% female) had no PD at follow-up (n = 43; 50.6%), whereas at baseline only 13 patients (15.3%; 76.9%

**Table 1.** Crosstabulation of numbers of trauma diagnosis (based on a severity score) at baseline versus 2-year follow-up (n).

Baseline	Follow-up					Total Baseline
	No PTSD	PTSD	CPTSD	DDNOS	DID	
No PTSD	31	4	1	1	0	37
PTSD	8	5	0	1	0	14
CPTSD	6	6	8	1	0	21
DDNOS	5	1	1	4	0	11
DID	0	0	0	1	1	2
Total Follow-up	50	16	10	8	1	85

**Table 2.** Crosstabulation of number of personality disorders at baseline versus 2-year follow-up (n).

Baseline	Follow-up							Total Baseline	
	No PD	1	2	3	4	5	6		7
No PD	12	1	0	0	0	0	0	0	13
1 PD	11	8	1	0	0	0	0	0	20
2 PDs	9	5	3	0	0	0	0	0	27
3 PDs	6	7	2	2	2	0	0	0	19
4 PDs	5	0	2	1	1	0	0	1	10
5 PDs	0	0	1	1	1	0	0	1	4
6 PDs	0	0	0	1	1	0	0	0	2
Total Follow-up	43	21	9	5	6	0	0	1	85

female) had no PD. When looking in more detail at patients who had no trauma-related diagnosis at follow-up (n = 50), 33 of them also had no PD at follow-up (38.8% of the total sample of 85 patients), versus 10 patients at baseline with no trauma-related diagnosis and no PD (11.8% of the total sample of 85 patients). In Table 3, the improvement, stability and worsening of comorbid diagnoses is shown, indicating mostly improvement in trauma diagnosis with stable PD(s) (n = 30; 35.2%), improvement in both diagnosis (n = 19; 22.4%), stability in both diagnosis (n = 17; 20.0%) or stability in trauma diagnosis with improvement in PD(s) (n = 7; 8.2%). Patients who improved on trauma-diagnose severity but worsened in the amount of PDs were only a few (n = 4; 4.7%), as well as patients who improved in PD(s) and worsened in trauma-diagnosis severity (n = 2; 2.4%). Only one patient (1.2%) worsened in terms of TRD/DD and PDs. This was a male patient who was diagnosed with DDNOS and four PDs.

Considering the four PDs which were most often diagnosed at follow-up, in descending order: PD not otherwise specified (35.3%), avoidant PD (18.8%), depressive PD (15.3%) and borderline PD (10.6%; see for more detail supplementary Table 3). There were no gender differences in (amount of) PDs at follow-up (and at baseline). However, trauma-diagnose severity was not equally distributed among gender at follow-up (see supplementary table 4), indicating that men were more often diagnosed with CPTSD and DDNOS (both 16.7%) than women (9.8% and 8.2%, respectively), while a higher

**Table 3.** Crosstabulation of improvement, stability and worsening of comorbid diagnoses at baseline and 2-year follow-up (n; %).

Amount of PD(s)	Severity trauma diagnosis			Total
	Improved	Stable	Worsened	
Improved	19 (22.4)	7 (8.2)	2 (2.4)	28 (32.9)
Stable	30 (35.2)	17 (20)	2 (2.4)	49 (57.7)
Worsened	4 (4.7)	3 (3.5)	1 (1.2)	8 (9.4)
Total	53 (62.4)	27 (31.7)	5 (5.9)	85

Improved = less severe trauma diagnosis and/or less PDs at follow-up compared to baseline; Stable = the same severity trauma diagnosis and/or amount of PDs at baseline and follow-up; Worsened = more severe trauma diagnosis and/or more PDs at follow-up compared to baseline.

**Table 4.** Course of general psychopathology, dissociative symptoms and personality pathology for the patient cohort as a whole (N = 85).

Variable	Baseline (M, SD)	Follow-up (M, SD)	T-test (df)	p	Cohen's d
General psychopathology (SCL-90-R)	234.74 (62.64)	199.47 (78.33)	4.92 (83)	.000	.56
Dissociative symptoms (DES)	63.96 (48.50)	49.53 (45.74)	3.31 (84)	.001	.29
Self-control (SIPP-118) <sup>a</sup>	4.69 (.95)	5.25 (1.10)	-5.19 (84)	.000	-.59
Identity integration (SIPP-118) <sup>a</sup>	3.40 (.75)	3.98 (.99)	-5.69 (84)	.000	-.77
Responsibility (SIPP-118) <sup>a</sup>	4.60 (.80)	5.00 (.73)	-5.67 (84)	.000	-.50
Relational capacities (SIPP-118) <sup>a</sup>	3.53 (.83)	4.01 (.98)	-4.54 (84)	.000	-.58
Social concordance (SIPP-118) <sup>a</sup>	5.69 (.98)	5.98 (1.00)	-3.39 (84)	.001	-.29

<sup>a</sup>On the Severity Indices of Personality Problems (SIPP-118) a negative result on the t-tests and Cohen's d implies improvement.

percentage of women were diagnosed with PTSD compared to men (19.7% and 12.5%, respectively).

### 2.5. Symptom course

As displayed in Table 4, for the cohort as a whole, symptoms of general psychopathology and dissociative symptoms declined significantly during the two-year follow-up period, with respectively medium and small effect sizes. Furthermore, there was a significant improvement on personality psychopathology measured with SIPP-118, with medium to large effect sizes (range -0.50 to -0.77), except for social concordance, which had a small effect size (-0.29). When analysing symptom course for men and women separately, findings showed that women were fully responsible for the significant changes (Table 5). For men, there were no significant improvements, whereas for women, symptoms of general psychopathology and dissociation significantly declined and all domains of personality psychopathology significantly improved, with medium to large (range 0.44 to 0.97) effect sizes.

### 2.6. Predictors of course

In predicting the course of patients with trauma-related, dissociative and personality disorders we focused on change score on SCL-90-R. Regressing the change score on demographics, the severity of reported trauma in childhood and adulthood, defined

as before and after the age of 16 (STI), dissociative symptoms (DES) and severity of personality pathology (SIPP-118; see Table 6) showed that gender (female) was the only significant predictor ( $\beta = -45.05$ ;  $t(82) = -2.88$ ;  $p = .005$ ), indicating that women improved significantly more than men.

## 3. Discussion

The aim of this study was to describe the (predictors of) course of (comorbid) TRDs, DDs and PDs of a patient cohort, and to test possible gender differences. Furthermore, we wanted to describe possible differences in demographics and clinical profiles between respondents and non-respondents.

The study showed that during the two-year follow-up period there was a significant decline in general psychopathology, dissociative symptoms and personality psychopathology in patients with (comorbid) TRDs, DDs and PDs. When considering gender differences, we noticed that only women significantly improved during the follow-up period. We also found that gender predicted the difference-score on general psychopathology between baseline and follow-up, in favour of women. This contradicts findings of the meta-analysis on naturalistic studies of Steinert et al. (2015), who identified female gender as one of several predictors of a more chronic course of PTSD. Furthermore, the meta-analysis on prospective studies of Álvarez-Thomas, Ruiz, Guilera, and Bados (2019) found no significant gender differences

**Table 5.** Course of general psychopathology, dissociative symptoms and personality pathology differentiated by men (N = 24) and women (N = 61).

Variable	Baseline (M, SD)		Follow-up (M, SD)		T-test (df)		p		Cohen's d	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
General psychopathology (SCL-90-R)	211.55 (62.46)	242.98 (61.10)	209.52 (84.35)	195.90 (76.48)	.18 (21)	5.56 (61)	.858	.000	.03	.77
Dissociative symptoms (DES)	48.09 (49.85)	69.85 (47.05)	51.13 (50.88)	48.94 (44.11)	-.34 (22)	4.39 (61)	.737	.000	-.06	.44
Self-control (SIPP-118) <sup>a</sup>	4.89 (.90)	4.62 (.96)	5.14 (.97)	5.29 (1.15)	-1.32 (22)	-5.28 (61)	.199	.000	-.27	-.70
Identity integration (SIPP-118) <sup>a</sup>	3.57 (.74)	3.33 (.75)	3.76 (.98)	4.06 (.99)	-1.05(22)	-6.13 (61)	.306	.000	-.26	-.97
Responsibility (SIPP-118) <sup>a</sup>	4.50 (.86)	4.63 (.78)	4.77 (.74)	5.08 (.72)	-1.94 (22)	-4.84 (61)	.065	.000	-.31	-.58
Relational capacities (SIPP-118) <sup>a</sup>	3.67 (.93)	3.48 (.79)	3.68 (.99)	4.13 (.96)	-.04 (22)	-5.18 (61)	.967	.000	-.01	-.82
Social concordance (SIPP-118) <sup>a</sup>	5.64 (1.04)	5.70 (.97)	5.52 (1.16)	6.16 (.88)	.82 (22)	-4.57 (61)	.420	.000	.12	-.47

<sup>a</sup>On the Severity Indices of Personality Problems (SIPP-118) a negative result on the t-tests and Cohen's d implies improvement.

**Table 6.** Univariate regression models for change score of the SCL-90-R.

	$\beta$	Standard error	$t$
Age	.47	.58	.81
Gender (female)	-45.05	15.65	-2.88*
Severity of reported trauma before 16y	-12.86	10.85	-1.19
Severity of reported trauma after 16y	-8.38	9.36	-.90
Total score DES	.05	.15	.33
Self-control (SIPP-118)	3.33	7.70	.43
Identity integration (SIPP-118)	16.93	9.54	1.77
Responsibility (SIPP-118)	6.22	8.99	.69
Relational capacities (SIPP-118)	13.20	8.58	1.54
Social concordance (SIPP-118)	-3.02	7.35	-.41
Total minutes of treatment	.001	.001	.85
Total days of hospitalization	-.07	.09	-.68

\*significant:  $p < 0.05$

in changes in BPD diagnosis or in depressive symptoms. However, a meta-analysis on short-term prognosis during, and following, trauma-focused interventions showed that women reported greater reductions in PTSD symptoms than men (Wade et al., 2016). These divergent findings indicate that the role of gender in the course of (comorbid) TRDs, DDs and PDs is not straight forward. It could be that gender differences in the course of these disorders depend on specific comorbidities in men and women, in combination with specific trauma histories, and differences between women and men in their tendencies towards more internalizing or externalization psychopathology. In addition, there could be methodological differences in studies on (female) rape victims and (male) military veterans and difficulties in determining the role of other gender-related differences in, for example, coping strategies and expression of emotions, which could trouble treatment outcomes (Wade et al., 2016). Moreover, results of a study on gender differences in experiences of care by 153 Australians with a diagnosis of BPD (Lawn & McMahon, 2015) indicated gender-related trends in variables of interest such as finding psychotherapy helpful (25% of men compared to 71% of women) and finding hospital admissions helpful (12.5% of men compared to 50.5% of women). These results indicating gender differences in service users' perspectives of psychiatric treatment warrant further investigation.

For our cohort as a whole, the percentage of patients who did not have TRD or DD increased by 15.3% between baseline and follow-up. The percentage of patients in the cohort without PD even increased by 35.3%. Our study did not confirm previous findings of, e.g. Dorrepaal et al. (2012), Bae et al. (2016) and Brand et al. (2019), who found that levels of dissociative symptoms predicted the course of patients with, respectively (C)PTSD and DDs. A possible explanation could be that these studies included a selective group of patients following

a specific treatment program, whereas we reported findings of a more heterogenous cohort of patients. Also, the follow-up period of Dorrepaal et al. (2012) and Bae et al. (2016) was shorter, making results hard to compare. Our findings, indicating that comorbid PTSD did not influence the course of BPD, are in line with those of Barnicot and Crawford (2018). However, our findings, indicating that history of trauma did not predict the course of PD, do not confirm those reported by Gunderson et al. (2006), Skodol et al. (2005) and Zanarini et al. (2006). It could be that differences in length of follow-up period influenced this outcome (2 years versus 6 to 10 years), although Gunderson et al. (2006) had also a follow-up period of 2 years. However, Gunderson et al. focused on BPD only, whereas we included all PDs, which could implicate that the influence of a history of trauma differs among different PDs. Furthermore, it might be that using another operationalization of severity of the trauma, such as the sum of reported childhood and adult trauma or a childhood trauma index score, would have provided other results.

Our comparative evaluation of baseline clinical profiles of respondents and non-respondents, differentiated by gender, showed that sexual abuse was significantly more often reported by female respondents, compared to female non-respondents. A possible explanation could be that respondents suffered more because of their endured trauma (abuse) and therefore were more likely to cooperate in the current study. Considering the trauma diagnosis severity score at baseline, the distribution among female respondents and female non-respondents differed significantly. Hereby, female non-respondents had more often no PTSD diagnosis than female respondents, whereas female respondents were more often diagnosed with DD NOS or DID than female non-respondents. Lower suffering, and therefore lower motivation to participate in the study, could explain a higher rate of no PTSD diagnosis among female non-respondents. Furthermore, non-respondents who emigrated, moved or changed their phone number were no longer in treatment (at GGZ Friesland), which could explain a higher rate of no PTSD diagnosis. In addition, suffering from DDs could have made participants more conscious of the importance of this study, explaining the higher rate of DDs in female respondents compared to female non-respondents.

Although we did not intend to collect data on suicide (attempts) in our patient cohort, the suicide of six patients, who all were diagnosed with (C)PTSD or DD NOS and one or more PD(s) during the follow-up period, indicated a high rate of mortality. In contrast to the fact that in the general suicide rate among men is far higher in general population than among women (Freeman et al., 2017), all patients

who committed suicide in our study were women. A 27-year follow-up study of patients with PD in Norway has shown that the number of deaths caused by suicides is especially high for women (Høye, Jacobsen, & Hansen, 2013). On the other hand, a large cohort study among PD patients (59.7% female) in Sweden found that, in a mean follow-up period of 11.7 years after hospitalization, 4.7% of women and 7.2% of men committed suicide (Björkenstam, Ekselius, Berlin, Gerdin, & Björkenstam, 2016). Compared to findings of Björkenstam et al. (2016), the suicide rate in our patient cohort of 4.0% within a 2-year period is high. It might well be that the high comorbidity of TRDs, DDs and PDs in our study is an explanation for this relatively high rate of suicides.

A strength of our study is the extensive and repeated assessment of TRDs, DDs and PDs using structured clinical interviews, whereas other studies often rely on self-report questionnaires (i.e. Brand et al., 2019; Dorrepaal et al., 2012). A limitation, on the other hand, is that the same well-trained psychologists performed baseline and follow-up assessments, meaning that the psychologists were not blind. Another possible limitation is that we used instruments that assessed diagnoses conform to DSM-IV-TR (American Psychiatric Association [APA], 2000). Our baseline assessment started before the arrival of DSM-5, and at the start of the follow-up assessment there were no validated instruments for assessment conform DSM-5 that were comparable to the instruments used at baseline. However, the main change between DSM-IV-TR and DSM-5, relevant for our study, is the transfer of PTSD from the cluster of anxiety disorders to the cluster 'trauma- and stress-related disorders' (APA, 2013; Philips, 2015). There are minor changes in criteria of TRDs, DDs and PDs between DSM-IV-TR and DSM-5. Furthermore, insight in the impact of treatment is limited in this study, because we did not study the effect of treatment in a random clinical trial setting, but measured the so-called naturalistic course of patients in treatment, which is prone to selection bias. Also, receiving a therapy does not give any indication of the effectiveness of this treatment for a particular patient. On the other hand, descriptive data from a 'real-world' setting is highly important to understand the complexity of patients and gain insight in the course of pathology in clinical settings. Finally, the number of drop-outs limits the conclusions we could draw in this study, although a same rate of drop-out can be expected in further studies in this complex and challenging population. Also, the drop-out rate in our study is comparable to those found in other studies in this research area (e.g. Myrick, Webermann, Langeland, Putnam, & Brand, 2017).

This study shows that high comorbidity of TRDs, DDs and PDs is more rule than the exception in patients who report childhood trauma and emotional neglect. More insight on the course of comorbidities could help to guide treatment and to develop a more integrative and dimensional view on psychopathology following childhood trauma. We recommend that future research pays more attention to these comorbidities, by using less exclusion criteria and looking at psychopathology in a more transdiagnostic way, instead of a categorical manner. Furthermore, our study showed that the (course of) psychopathology differs significantly among men and women, pointing to the need for more attention on gender differences in treatment and future research.

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### ORCID

Sanne Swart  <http://orcid.org/0000-0002-8575-181X>  
 Adriaan W. Hoogendoorn  <http://orcid.org/0000-0003-4784-0712>  
 Jan H. Smit  <http://orcid.org/0000-0002-2062-8378>

### Data availability

The dataset collected within the framework of the study will be archived and stored at the department of Research and Innovations (R&I) of GGZ Ingeest, Amsterdam the Netherlands. Request for data access should be addressed to the Data Access Committee of R&I (onderzoek@ggzingeest.nl) with subject name Friesland Study.

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