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CLINICAL RESEARCH ARTICLE

Symptom burden and work-related impairment among patients with PTSD and complex PTSD

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ABSTRACT

Background: The 11th revision of the International Classification of Diseases includes a new chapter of stress-related disorders and presents two distinct sibling conditions: Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD). Studies show that PTSD and CPTSD are associated with different levels of symptom burden, comorbidity and functional impairment, but have not yet addressed the qualitative and quantitative differences in work-related impairment between the two diagnoses.

Objective: The aim of this study was to replicate differences in symptom severity, global distress, and the number of comorbid diagnoses between three groups that suffer from no PTSD, PTSD, or CPTSD. More importantly, we evaluated whether the three groups differ in indicators of functional impairment such as qualitative and quantitative working capacity. Finally, this study supplies information on prevalence rates of PTSD and CPTSD in a clinical sample suffering from psychosomatic complaints.

Methods: Participants were 662 patients of a Psychosomatic Rehabilitation Clinic (age *M* = 50.99, *SD* 8.99 years; 70.1% female). Self-report screening instruments were administered to participants at the beginning of their inpatient psychotherapy. Multivariate analysis of variance and Chi Square tests were utilized to assess group differences in symptom severity, comorbidity and work-related impairment.

Results: A prevalence of 13.3% CPTSD and 9.5% PTSD was found among the current sample. CPTSD was associated with heightened symptom burden and more comorbid diagnoses. More importantly, CPTSD was associated with a significantly lowered qualitative and quantitative working capacity compared to PTSD and no-PTSD.

Conclusions: The high prevalence, greater psychopathological burden and work-related impairments in CPTSD compared to PTSD highlight the need for developing and evaluating new interventions in rehabilitation that address the complexity of the new disorder.

Carga de síntomas y deterioro relacionado con el trabajo entre pacientes con TEPT y TEPT complejo

Antecedentes: la décimaprimera revisión de la Clasificación Internacional de Enfermedades incluye un nuevo capítulo de trastornos relacionados con estrés y presenta dos condiciones distintas hermanas: trastorno de estrés postraumático (TEPT) y TEPT complejo (TEPT-C). Los estudios muestran que el TEPT y el TEPT-C están asociados con diferentes niveles de carga de síntomas, comorbilidad y deterioro funcional, pero aún no han abordado las diferencias cualitativas y cuantitativas en el deterioro relacionado con el trabajo entre los dos diagnósticos.

Objetivo: El objetivo de este estudio fue replicar las diferencias en la gravedad de los síntomas, la angustia global y el número de diagnósticos comórbidos entre tres grupos, sin TEPT, con TEPT y con TEPT-C. Más importante aún, evaluamos si los tres grupos difieren en los indicadores de deterioro funcional, como la capacidad de trabajo cualitativa y cuantitativa. Finalmente, este estudio proporciona información sobre las tasas de prevalencia de TEPT y TEPT en una muestra clínica que padece molestias psicosomáticas.

Método: los participantes fueron 662 pacientes de una clínica de rehabilitación psicosomática (edad *M* = 50.99, *SD* 8.99 años; 70.1% mujeres). Los instrumentos de detección por auto-reporte se administraron a los participantes al comienzo de su psicoterapia hospitalaria. Se utilizó análisis multivariado de la varianza y pruebas de Chi cuadrado para evaluar las diferencias grupales en la gravedad de los síntomas, la comorbilidad y la discapacidad relacionada con el trabajo.

Resultados: Se encontró una prevalencia de 13.3% de TEPT-C y 9.5% de TEPT entre la muestra actual. El TEPT-C se asoció con una mayor carga de síntomas y más diagnósticos comórbidos. Más importante aún, el TEPT-C se asoció con una capacidad de trabajo cualitativa y cuantitativa significativamente reducida en comparación con TEPT y no TEPT.

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关键词
复杂型PTSD; 创伤后应激障碍; ICD-11; 工作损伤; 功能损伤; 患病率; 心身病患; 康复

HIGHLIGHTS

- A prevalence of 13.3% CPTSD and 9.5% PTSD was found among patients of a psychosomatic rehabilitation clinic.
- CPTSD was associated with substantially heightened psychiatric distress compared to PTSD.
- CPTSD was associated with lowered working capacity and treatment response compared to PTSD.
- Disorder-specific interventions are needed to address not only the unique symptom spectrum of CPTSD but also to increase patients' working capacity.

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Conclusiones: la alta prevalencia, la mayor carga psicopatológica y las deficiencias relacionadas con el trabajo en el TEPT-C en comparación con el TEPT destacan la necesidad de desarrollar y evaluar nuevas intervenciones en rehabilitación que aborden la complejidad del nuevo trastorno.

PTSD和复杂型PTSD患者的症状负荷和工作损伤

背景：第11版《国际疾病分类》 纳入了一个应激相关疾病的新章节，并提出了两种不同的同胞疾病：创伤后应激障碍（PTSD）和复杂型PTSD（CPTSD）。研究表明，PTSD和CPTSD与不同程度的症状负担， 并发症及功能损伤相关，但两种诊断在工作损伤上的定性和定量差异尚未解决。
目标：本研究旨在于无PTSD，PTSD或CPTSD这三组患者之间重复症状严重程度，整体痛苦和并发症诊断数目的差异。更重要的是，我们评估了这三个组在功能损伤指标（如定性和定量工作能力）方面是否有所不同。最后，本研究提供了患有心身不适疾病的临床样本中PTSD和CPTSD患病率的信息。
方法：参与者为662名心身康复诊所患者（平均年龄为50.99岁，SD为8.99岁；70.1％为女性）。在住院病人心理治疗开始时就对其进行自评式筛查。用多变量方差分析和卡方检验评估症状严重程度, 并发症和工作损伤的组别差异。
结果：当前样本中CPTSD组和PTSD组的患病率分别为13.3％和9.5％。CPTSD与更高的症状负荷与更多的并发症诊断相关。更重要的是，与PTSD组和无PTSD组相比，CPTSD组的定性和定量工作能力显著降低。
结论：与PTSD相比，CPTSD的高患病率，更大的精神负担和工作损伤凸显出开发和评估新的致力于新疾病复杂性的康复干预措施的需求。

The 11th revision to the World Health Organization's International Classification of Diseases (WHO, 2018) includes a new chapter of stress-related disorders and presents two distinct sibling conditions: Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD). CPTSD requires the presence of a diagnosis of PTSD plus three additional clusters reflecting disturbances in self-organization: (1) affective dysregulation, including symptoms such as hyperactivation (e.g. heightened emotional reactivity, anger outbursts) or hypoactivation (e.g. feeling emotionally numb or dissociated) of emotional states, (2) a negative self-concept as reflected in extreme negative self-evaluations and persistent negative views of the self, and (3) disturbances in relationships such as difficulties with developing and sustaining interpersonal relationships (e.g. feeling distant from others, having difficulty maintaining relationships).

The concept was first described by Herman (1992) to capture the impact of prolonged interpersonal trauma on self-organization. Previous research has established an elevated risk for CPTSD after exposure to interpersonal trauma that occurs early in life, that is prolonged and of a repetitive nature, or comprises multiple forms of traumatization from which escape is difficult or impossible (e.g. childhood abuse, prisoner of war experience, severe domestic violence, or torture). In contrast, an elevated risk for PTSD was associated with non-personal trauma, single-incident, adult traumatic exposure or repeated exposure to the same trauma (Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013; Hyland, Murphy, et al., 2017; Karatzias et al., 2017).

An ongoing debate about the distinctness of CPTSD from PTSD and borderline personality disorder led the committee for the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (APA, 2013) to reject the implementation of CPTSD as an independent diagnosis. Proponents of the new diagnosis, on the other hand, have suggested that the diagnosis of CPTSD has the potential to reduce the heterogeneity of symptom profiles (e.g. Maercker et al., 2013). Moreover, studies with PTSD patients have consistently shown high comorbidity with other mental disorders (Breslau et al., 1998; Creamer, Burgess, & McFarlane, 2001), suggesting that a diagnosis of PTSD may not be sufficient to cover the clinical picture of a significant part of trauma survivors. These controversies have fuelled a host of validation studies that explore characteristics of the new ICD-11 diagnosis.

A number of recent studies that employed confirmatory factor analysis and latent class analysis provide an empirical foundation for the distinct diagnostic concepts of PTSD and CPTSD (Brewin et al., 2017). It was confirmed that PTSD and CPTSD are distinctive disorders regarding the phenomenological differences in symptoms. Latent class analyses demonstrated that groups of trauma-exposed individuals have been identified with symptom profiles consistent with the distinction between PTSD and CPTSD. (Cloitre et al., 2013; Cloitre, Garvert, Weiss, Carlson, & Bryant, 2014; Elklit, Hyland, & Shevlin, 2014; Hyland, Brewin, & Maercker, 2017; Karatzias et al., 2016, 2017; Knefel, Garvert, Cloitre, & Lueger-Schuster, 2015; Knefel & Lueger-Schuster, 2013; Murphy, Elklit, Dokkedahl, & Shevlin, 2016; Perkonigg et al., 2016; Shevlin et al., 2017; Wolf et al., 2015). Typically, these studies identified three classes of individuals that were empirically distinguishable based on different patterns of symptom endorsement: a class high in PTSD but low in the other symptoms (PTSD), a class high in PTSD

symptoms, as well as in affective, negative self-concept, and interpersonal problems (CPTSD), and a class that is low in all symptoms (no PTSD group) (Cloitre et al., 2013; Perkonigg et al., 2016).

The literature further shows that disturbances in self-organization are related to heightened depression, negative trauma-related cognitions and reduced distress tolerance whereas classic PTSD symptoms are stronger predictors of panic disorder and generalized anxiety disorder (Hyland, Shevlin, Brewin, et al., 2017). CPTSD patients reported significantly more depression, anxiety, dissociation, sleep disturbances, somatization, interpersonal sensitivity, and aggression than PTSD patients (Elklit et al., 2014). Patients suffering from CPTSD had a higher number of comorbid mental diagnoses than the average patient of a psychosomatic rehabilitation clinic (Dorr, Firus, Kramer, & Bengel, 2016; Dorr, Sack, & Bengel, 2018). As the inclusion of a new diagnosis in ICD-11 has global implications, replication of results and the identification of further clinical and behavioural correlates that differentiate CPTSD from PTSD has been recognized as an important next step in the validation of CPTSD and for the development of disorder-specific interventions (Hyland, Shevlin, Fyvie, & Karatzias, 2018).

One important consequence of mental disorders in general and stress-related disorders in particular are capacity restrictions, such as work-related impairment. According to the bio-psycho-social illness concept, chronic illness such as PTSD and CPTSD manifest not only in disorder-specific symptoms but have further debilitating consequences such as illness-related capacity restrictions and disability (Linden, 2017). Capacities describe the ability of a person to cope with life and to participate in different areas of daily life in the context of a mental disorder. If a person is incapable to do what she or he desires or what is expected by the environment and according to their social roles, the result is impairment in psychological capacity dimensions and often a restriction in participation in social life (Linden, Keller, Noack, & Muschalla, 2018).

Existing studies suggest that PTSD and CPTSD are associated with different levels of functional impairment. Cloitre et al. (2013) assessed level of functioning in six domains: work, social and leisure activities, relationships with extended family, role as a marital partner, parental role, and role within the family unit. The results revealed that CPTSD was associated with greater overall functional impairment than PTSD. However, analyses were based on an overall mean score and no information about differential impairment in individual domains was presented. Furthermore, Karatzias et al. (2017) assessed functional impairment in five domains; work, home management, social leisure activities, private leisure activities and relationships with others. Due to the low employment rates in their sample, the scores on the work domain were excluded from the analyses. The study showed that CPTSD was related to increased functional impairment across the remaining four domains, with the largest effect sizes in the domains of family and relationship problems. However, work-related impairment has considerable personal and societal costs (Brunellos et al., 2001) and unemployment was shown to be a socio-demographic factor that is associated with an increased risk for CPTSD as compared to PTSD (Hyland, Murphy, et al., 2017).

With regard to PTSD, several studies have revealed that work-related impairment and disability are common consequences of the disorder (Breslau, Lucia, & Davis, 2004; Wald & Taylor, 2009). PTSD is reflected in higher rates of sickness absence, failure to return to work and reduced work performance and it has been shown that PTSD symptom severity is negatively correlated with work-related impairment (see Wald & Taylor, 2009, for a review). No study, however, has yet specifically evaluated qualitative and quantitative differences in work-related impairment between the two diagnoses of PTSD and CPTSD.

The current study therefore has the following aims: First, to replicate findings regarding differences in symptom severity, global distress, and comorbidity between three patient groups that suffer from no PTSD, PTSD, or CPTSD. We hypothesized that CPTSD patients suffer from higher levels of symptom severity, global distress and more comorbid mental health diagnoses than PTSD and no PTSD patients. Second, we intended to evaluate whether the three groups differ in quantitative and qualitative working capacity. We hypothesized that CPTSD patients have lower qualitative and quantitative working capacity compared to PTSD and no-PTSD patients. Finally, this study supplies information on prevalence rates of PTSD and CPTSD in a sample of psychosomatic rehabilitation patients.

1. Method

1.1. Participants and procedure

Participants were patients of a psychosomatic rehabilitation clinic in Germany (N = 662). Between May 2017 and February 2018 all newly admitted patients filled in computer-based screening questionnaires at the beginning of their inpatient psychotherapy as part of the clinic's routine internal admission diagnostics. For their inclusion in the study the admission diagnosis was not considered. Clinical ICD-10 diagnoses and functional impairment such as working capacity were assessed by experienced psychotherapists at the patients' discharge after an average of 38 days.

Psychosomatic rehabilitation was characterized by an interdisciplinary treatment approach focusing on the improvement or conservation of activity and participation in the professional and social life. A multimodal treatment concept was applied, including individual and group psychotherapy, psychoeducation, work-related therapies, exercise therapy, ergo therapy and relaxation therapy (Köllner, 2014; Linden, 2014). Psychosomatic rehabilitation specializes in the treatment of patients with chronic mental disorders. In Germany about 180 psychosomatic rehabilitation clinics treat 16.000 patients a year, primarily with affective disorders, anxiety-, stress- and somatoform disorders, behavioural disorders and personality disorders. In general, the patients have no physical injuries (Köllner, 2014). There was no specialization on PTSD, so the sample can be seen as representative for inpatient psychosomatic rehabilitation in Germany.

The majority of patients in our sample were female (70.1%; n = 464); the mean age of the sample was 50.99 years (*SD* 8.99; range 23–69 years). Before treatment, 69.8% (n = 462) were employed. A total of 15.1% (n = 100) reported being single, married (48.6%, n = 322), divorced or separated (13.4%, n = 89), widowed (2.6%, n = 17), or did not provide information regarding relationship status (20.2%, n = 134). College graduation was reported by 11.9% (n = 79), high school graduation by 24.6% (n = 163), middle school graduation by 2.9% (n = 19), vocational training by 60.3% (n = 399), and education level without graduation by 0.3% (n = 2).

1.2. Measures

1.2.1. Posttraumatic stress disorder

PTSD was assessed with the German revised Impact of Event Scale (Maercker & Schützwohl, 1998), a 22-item self-report measure with three subscales (avoidance, intrusions & hyperarousal) assessing subjective distress caused by traumatic events. Items are rated on a 5-point scale ranging from 0 ('not at all') to 4 ('extremely'). The IES-R is a valid instrument and the German version demonstrated good internal consistency (α = .79 – .90) (Maercker & Schützwohl, 1998). In the current study Cronbach´s α was excellent for all subscales: intrusions (α = .93), hyperarousal (α = .91), and avoidance (α = .89). To establish a suspected diagnosis of PTSD we used the validated and well-established formula provided by Maercker and Schützwohl (1998): X = (–0.02 x intrusion)+(0.07 x avoidance)+(0.15 x hyperarousal)–4.36. Values lower than zero indicate PTSD. The application of the test value derived from the formula resulted in a sensitivity of .76 and a specificity was .88 when the structured clinical DIPS interview (Margraf, Schneider, & Ehlers, 1991) was used as the gold standard. Patients were assigned to the PTSD group if they screened positive for PTSD in the IES-R and negative for CPTSD in the SkPTBS.

1.2.2. Complex posttraumatic stress disorder

CPTSD was assessed with the Screening for Complex Posttraumatic Stress Disorder [Original title: Screening zur komplexen Posttraumatischen Belastungsstörung; SkPTBS] (Dorr et al., 2016), a German self-report questionnaire to identify patients at risk for CPTSD. The scale assesses the experience of potentially traumatic events in a checklist of 14 categories (see Table 1) and symptoms of CPTSD according to ICD-11 criteria. The symptoms of CPTSD are measured with 14 items rated on a 7-point scale ranging from 0 ('not correct at all') to 6 ('completely correct'). The diagnostic criteria of PTSD are not assessed in this measure and were estimated with the IES-R in this study. The SkPTBS demonstrated excellent internal consistency (α = .91), good concurrent and discriminant validity (Dorr et al., 2016, 2018). In the current study, the internal consistency was excellent (α = .91). A validated cut-

Table 1. Frequencies of potentially traumatic events in % (multiple nominations possible).

Type of traumatic event	no-PTSD (n = 511)	PTSD (n = 63)	CPTSD (n = 88)	χ^2 (6/N = 662)	*p*
Accident	49.3	50.8	60.2	3.577	.167
Natural disaster	15.9	20.6	33.0	14.711	.001
Acute life-threating disease	35.6	44.4	44.3	3.807	.149
Death of a family member or close friend	43.2	66.7	63.6	22.021	<.001
Traumatic experience at work	21.9	28.6	44.3	20.153	<.001
War	1.8	1.6	8.0	8.815	.009
Lifetime neglect	23.1	12.7	43.2	21.706	<.001
Criminal violence	17.8	14.3	42.0	28.613	<.001
Torture/hostage	2.0	0	3.4	1.845	.353
Physical assault	33.7	34.9	72.7	48.657	<.001
Lifetime sexual abuse	19.0	0	42.0	42.404	<.001
Other	13.3	15.9	25.0	8.036	.018
Frequency of traumatic events					
One traumatic event	18.8	14.3	4.5	11.310	.003
Two traumatic events	16.2	23.8	13.6	2.968	.227
Three traumatic events	13.7	25.4	18.2	6.488	.039
Four and more traumatic events	33.9	31.7	63.6	29.396	<.001

Traumatic events were first-hand experienced or witnessed

off value of 81 (suspected CPTSD) was used, which is associated with a sensitivity of .96, and a specificity of .61 (Dorr et al., 2016). Patients were assigned to the CPTSD group if they screened positive for PTSD in the IES-R and positive for CPTSD in the SkPTBS.

1.2.3. Symptom severity

Severity of psychopathological symptoms was assessed with the Symptom-Checklist-90–Revised (SCL-90-R; Derogatis, 1986) before the rehabilitation treatment. The SCL-90-R is a 90-item self-report inventory with nine primary symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. It assesses distress caused by a symptom using a 5-point Likert scale from 0 ('not at all') to 4 ('very strong'). Higher scores indicate greater psychopathology. The Global Severity Index (GSI) represents the overall psychological distress (Derogatis, 1986). Studies showed good psychometric properties with Cronbach's α between .76 and .91 (Franke, 2002). In the current study internal consistencies ranged from .78 (hostility) to .91 (depression).

1.2.4. Quantitative working capacity

Quantitative working capacity (able/unable to work) was assessed before and after treatment by experienced clinicians using structured criteria. A more differentiated evaluation of work capacity (number of hours able to work) was made at discharge and rated within the following categories: (1) more than six hours per day, (2) three to six hours and (3) less than three hours. Possible gainful activity of less than six hours is considered a partial reduction in earning capacity whereas a capacity of less than three hours per day is considered a full reduction in earning capacity (Köllner, 2014).

1.2.5. Qualitative working capacity

The Mini-International Classification of Functioning, Disability and Health for activity and participation disorders in the context of mental disorders–self-rating (Mini-ICF-APP-S; Linden et al., 2018) assesses and quantifies the level of functional impairment and participation restrictions. It covers 13 dimensions relevant for mental disorders: Adherence to regulation, planning and structuring of tasks, flexibility and ability to adapt to changes, competency and application of knowledge, ability to make decisions and judgements, proactivity and spontaneous activity, endurance and perseverance, assertiveness, contact with others and small talk, group integration, dyadic or close relations, self-care, and mobility. It allows a dimensional rating from 0 ('this is definitely a strength of mine') to 7 ("I am fully unfit to do this"). It is based on the Mini-ICF-APP, an observer-rating instrument covering the same dimensions which has become the international standard for socio-medical expert assessments (DRV, 2018). The Mini-ICF-APP-S rating was shown to be sensitive to change and the interrater reliability was excellent (r = .92) (Linden et al., 2018). In the current study the Cronbach's α was .91. Qualitative working capacity was assessed before the rehabilitation treatment.

1.3. Statistical analyses

Data were analysed using IBM SPSS Statistics version 25. MANOVAs including Bonferroni adjusted post-hoc tests were performed to assess differences in symptom severity and qualitative working capacity among the CPTSD group, PTSD group and the group without PTSD. To analyse differences in the number of comorbid diagnoses, a Bonferroni adjusted ANOVA was performed. Due to the categorial nature of variables assessing quantitative working capacity, we used Chi-square tests to analyse the differences. We used an alpha level of .05 for all statistical tests. As questionnaires were administered via computer, there were no single missing values. However, some patients (n = 34, 5.1%) did not complete the Mini-ICF-APP-S and therefore results regarding qualitative work capacities are based on a smaller sample.

2. Results

2.1. Prevalence of traumatic experiences

The majority of patients reported having experienced or witnessed at least one traumatic event (n = 570; 86.1%). A total of 151 (22.8%) patients were identified as probable cases suffering from PTSD. Among them, 88 patients also screened positive for CPTSD, suggesting a prevalence of 13.3% (n = 88) for CPTSD and 9.5% (n = 63) with PTSD in the subset of the sample that reported trauma-exposure. The frequency of exposure to different types of trauma is reported in Table 1. Patients with CPTSD (63.7%) reported almost twice as often having experienced four or more different traumatic events than the PTSD (31.7%) and no-PTSD (33.9%) patients. Exposure to only one type of trauma was reported by 4.5% of CPTSD patients. Interpersonal trauma was reported more often among CPTSD (72.7%, 42.0%) as compared to the PTSD (34.9%, 0%) and no-PTSD (33.7%, 19.0%) patients. Patients with CPTSD more frequently reported repeated trauma (more than 4–5 times; 40.9%, n = 36) and prolonged traumatization (3 years and longer; 39.8%, n = 35) than PTSD (11.1%, n = 7; 23.8%, n = 15) and no-PTSD patients (15.3%, n = 78; 14.3%, n = 73). Similarly, man-made-disaster was reported more frequently by CPTSD (71.5%, n = 63) than PTSD (42.9%, n = 27) and no-PTSD patients (43.4%, n = 222).

The mean ages of the CPTSD (50.57 years, SD = 9.17), PTSD (52.48 years, SD = 8.20) and no-PTSD (50.88 years,

SD = 9.05) groups did not differ significantly (F (2,659) = 0.997, p = .369). There was no significant difference in the gender distribution (χ^2 (2) = 2.52, p = .283) for the no-PTSD (male = 80.3%, female = 75.9%), PTSD (male = 9.6%, female = 9.5%) and CPTSD (male = 10.1%, female = 14.7%) groups.

2.2. Symptom severity

Descriptive and ANOVA statistics of the SCL-90-R symptom dimensions and the GSI among the groups are presented in Table 2. Across all dimensions CPTSD patients had higher mean scores than patients with PTSD or no-PTSD. A MANOVA showed that the group effect was significant (Pillai trace: V = .371, F (20,1302) = 14.842, p < .001, partial η^2 = .186). Bonferroni-adjusted post hoc analyses indicated significant differences between all three groups except for the interpersonal sensitivity dimension where PTSD and no-PTSD patients did not differ (Table 3).

2.3. Comorbidity

At the end of the treatment, patients with CPTSD had more comorbid mental health diagnoses (M = 2.78, SD = 1.01) than patients with PTSD (M = 2.27, SD = 1.02) and patients with no-PTSD (M = 2.10, SD = .92). The groups differed significantly regarding the number of comorbid diagnoses (F(2,659) = 19.586, p < .001, partial η^2 = .056). Significant Bonferroni-corrected differences emerged between the CPTSD and the PTSD group (p = .003) as well as the CPTSD and the no-PTSD group (p < .001). No significant differences in the number of diagnoses were found between the PTSD and the no-PTSD group (p = .566). Type and proportion of other comorbid clinical diagnoses as assigned by psychotherapists at the end of rehabilitation are presented in Table 4.

2.4. Working capacity

2.4.1. Quantitative working capacity

The majority of the CPTSD patients (87.5%, n = 77), PTSD patients (74.6%, n = 47) and no-PTSD patients (60.5%, n = 309) were incapacitated for work at the beginning of the rehabilitation. After the rehabilitation, 86.4% (n = 76) of CPTSD patients, 66.7% (n = 42) of PTSD patients and 54.6% (n = 279) of no-PTSD patients were still incapacitated. A Chi-square test indicated that the groups differed significantly in their working capacity at the beginning (Pearson's χ^2 (2/N = 662) = 26.84, p < .001) and at the end of the rehabilitation (Pearson's χ^2 (6/N = 662) = 33.27, p < .001).

Regarding the quantitative working capacity rating in hours, patients with CPTSD (n = 22, 25%) were more frequently assigned a capacity under three hours per day than patients with PTSD (n = 6, 9.5%) or no PTSD (n = 37, 7.3%, see Table 5). The Chi-Square test revealed that the groups differed significantly (Pearson's χ^2 (4/N = 659) = 32.08, p < .001). Moreover, regarding the capacity to work in their last job, CPTSD patients (n = 38, 43.2%) were more frequently rated with a capacity under

Table 2. Differences in comorbid symptom severity in PTSD, CPTSD and no-PTSD at the beginning of rehabilitation.

	no-PTSD	PTSD	CPTSD	ANOVA		
Symptom dimensions (SCL-90 Subscales)	*M (SD)*	*M (SD)*	*M (SD)*	*F*(2,659)	*p*	partial η^2
Somatization	.99 (.66)	1.42 (.66)	1.92 (.78)	77.619	< .001	.191
Obsessive-compulsive	1.35 (.78)	1.82 (.80)	2.62 (.75)	102.881	< .001	.238
Interpersonal sensitivity	.96 (.76)	1.18 (.71)	2.16 (.90)	90.547	< .001	.216
Depression	1.39 (.79)	1.83 (.67)	2.56 (.74)	89.920	< .001	.214
Anxiety	.98 (.65)	1.48 (.65)	2.19 (.84)	125.342	< .001	.276
Hostility	.74 (.62)	1.07 (.60)	1.58 (.85)	63.739	< .001	.162
Phobic anxiety	.64 (.74)	1.10 (.91)	2.00 (1.08)	109.019	< .001	.249
Paranoid ideation	.87 (.76)	1.28 (.82)	2.00 (.94)	78.869	< .001	.193
Psychoticism	.50 (.47)	.73 (.48)	1.41 (.81)	113.621	< .001	.256
Global severity index	.99 (.56)	1.38 (.51)	2.08 (.65)	143.308	< .001	.303

Table 3. Bonferroni adjusted post-hoc tests for SCL-90 subscales.

	no-PTSD – PTSD		no-PTSD – CPTSD		PTSD- CPTSD	
Symptom dimensions	*Mean Difference*	*p*	*Mean Difference*	*p*	*Mean Difference*	*p*
Somatization	−.43	< .001	−.93	< .001	−.50	< .001
Obsessive-compulsive	−.47	< .001	−1.27	< .001	−.80	< .001
Interpersonal sensitivity	−.21	.115	−1.20	< .001	−.98	< .001
Depression	−.45	< .001	−1.17	< .001	−.72	< .001
Anxiety	−.51	< .001	−1.21	< .001	−.70	< .001
Hostility	−.33	< .001	−.83	< .001	−.50	< .001
Phobic anxiety	−.46	< .001	−1.36	< .001	−.90	< .001
Paranoid ideation	−.41	< .001	−1.12	< .001	−.71	< .001
Psychoticism	−.24	.002	−.91	< .001	−.67	< .001
Global severity index	−.39	< .001	−1.09	< .001	−.70	< .001

no-PTSD: n = 511; PTSD: n = 63; CPTSD: n = 88.

Table 4. Proportion of mental comorbidity (clinical diagnosis).

		no-PTSD		PTSD		CPTSD	
Diagnose category	ICD-Code	*n*	%	*n*	%	*n*	%
Affective disorders	F30-F39	361	70,65	47	74,60	74	84,09
Depressive episode	F32	95	18,59	15	23,81	15	17,05
Recurrent depressive disorder	F33	253	49,51	30	47,62	57	64,77
Dysthymia	F34.1	10	1,96	1	1,59	2	2,27
Organic, including symptomatic, mental disorders	F00-F09	8	1.57	0	0	2	2.27
Mental and behavioural disorders due to psychoactive substance use	F10-F19	83	16,24	9	14,29	24	27,27
Schizophrenia, schizotypal and delusional disorders	F20-F29	6	1,17	0	0,00	2	2,27
Phobic and other anxiety disorders	F40-F41	129	25,24	24	38,10	32	36,36
Obsessive-compulsive disorder	F42	0	0,00	2	3,17	5	5,68
Reaction to severe stress, and adjustment disorders	F43	115	22,50	22	34,92	34	38,64
Post-traumatic stress disorder	F43.1	23	4,50	10	15,87	27	30,68
Adjustment disorders	F43.2	88	17,22	6	9,52	7	7,95
Dissociative disorders	F44	1	0,20	0	0,00	0	0,00
Somatoform disorders	F45	101	19,77	17	26,98	29	32,95
Other neurotic disorders	F48	7	1,37	1	1,59	0	0,00
Eating disorders	F50-F59	113	22,11	5	7,94	8	9,09
Disorders of adult personality and behaviour	F60-F69	49	9,59	4	6,35	20	22,73
Comorbidity		no-PTSD		PTSD		CPTSD	
Number of mental disorders	F00-F99	*n*	%	*n*	%	*n*	%
1		133	26.0	15	23.8	6	6.8
2		235	46,0	25	39.7	32	36.4
3		98	19.2	16	25.4	31	35.2
≥ 4		43	8.4	7	11,1	19	21.6

Table 5. Proportion of the quantitative capacity rating in % (n).

	Last job			General job market		
	Less than 3 h	3 – 6 h	6 and more h	Less than 3 h	3 – 6 h	6 and more h
No-PTSD	19.3% (98)	5.7% (29)	75% (381)	7.3% (37)	6.5% (33)	86.2% (438)
PTSD	25.4% (16)	7.9% (5)	66.7% (42)	9.5% (6)	11.1% (7)	79.4% (50)
CPTSD	43.2% (38)	11.4% (10)	45.5% (40)	25% (22)	11.4% (10)	63.6% (56)

Table 6. Proportion of qualitative impairments in working capacity in PTSD, CPTSD and no-PTSD at the beginning of rehabilitation.

	no-PTSD	PTSD	CPTSD	ANOVA		
Capacity dimension	*M(SD)*	*M(SD)*	*M(SD)*	*F*(2,625)	*p*	partial η^2
Adherence to regulation	1.50 (1.38)	1.42 (1.32)	2.19 (1.89)	8.061	< .001	.025
Planning & structuring of tasks	2.11 (1.67)	2.40 (1.44)	3.23 (1.89)	15.310	< .001	.047
Flexibility & ability to adapt to changes	2.99 (1.71)	3.28 (1.92)	4.73 (1.76)	33.740	< .001	.097
Competency & application of knowledge	1.92 (1.42)	2.05 (1.46)	3.31 (1.89)	29.085	< .001	.085
Ability to make decisions & judgements	2.12 (1.39)	2.10 (1.19)	3.09 (1.87)	15.486	< .001	.047
Proactivity & spontaneous activity	2.75 (1.75)	3.18 (1.55)	4.12 (1.70)	21.585	< .001	.065
Endurance & perseverance	3.18 (1.73)	3.10 (1.78)	4.54 (1.89)	20.801	< .001	.062
Assertiveness	3.20 (1.80)	3.07 (1.80)	4.63 (1.74)	22.221	< .001	.066
Contact with others & small talk	2.50 (1.81)	2.73 (1.67)	3.94 (1.98)	20.966	< .001	.063
Group integration	2.34 (1.50)	2.27 (1.15)	3.50 (1.76)	20.630	< .001	.062
Dyadic or close relations	1.79 (1.51)	1.62 (1.35)	2.76 (2.13)	13.579	< .001	.042
Self-care	2.73 (1.45)	2.68 (1.33)	3.36 (1.62)	6.454	.002	.020
Mobility	2.15 (1.68)	2.90 (1.62)	3.58 (1.77)	26.878	< .001	.079

three hours than patients with PTSD (n = 16, 25.4%) and no-PTSD (n = 98, 19.3%, see Table 5). The groups differed significantly (Pearson's χ^2 $(4/N = 659) = 31.93$, $p < .001$).

2.4.2. Qualitative working capacity

Descriptive statistics of the capacity dimensions among the groups and the ANOVA statistics are presented in Table 6. Patients with CPTSD reported higher mean scores in all capacity dimensions (Mini-ICF-APP-S) than patients with PTSD or patients with no-PTSD. A multivariate analysis of variance showed that the effect of group was significant (Pillai trace: $V = .179$, $F(26,1228) = 4.647$, $p < .001$, partial $\eta^2 = .090$). Bonferroni adjusted post-hoc tests are presented in Table 7.

3. Discussion

Besides contributing to the growing body of empirical support for the construct validity of ICD-11 CPTSD as a unique disorder by supplying information on symptom severity and comorbidity, the current study addresses work capacity as a socio-medical

Table 7. Bonferroni adjusted post-hoc tests.

	no-PTSD – PTSD		no-PTSD – CPTSD		PTSD- CPTSD	
Capacity dimension	*Mean Difference*	*p*	*Mean Difference*	*p*	*Mean Difference*	*p*
Adherence to regulation	.09	1.000	−.69	< .001	−.78	.006
Planning and structuring of tasks	−.29	.602	−1.12	< .001	−.83	.012
Flexibility and ability to adapt to changes	−.29	.653	−1.74	< .001	−1.45	< .001
Competency and application of knowledge	−.13	1.000	−1.38	< .001	−1.26	< .001
Ability to make decisions and judgements	.02	1.000	−.97	< .001	−.99	< .001
Proactivity and spontaneous activity	−.43	.202	−1.36	< .001	−.93	.005
Endurance and perseverance	.08	1.000	−1.36	< .001	−1.44	< .001
Assertiveness	.13	1.000	−1.43	< .001	−1.56	< .001
Contact with others and small talk	−.24	1.000	−1.44	< .001	−1.20	< .001
Group integration	.07	1.000	−1.16	< .001	−1.23	< .001
Dyadic or close relations	.17	1.000	−.97	< .001	−1.14	< .001
Self-care	.05	1.000	−.63	.001	−.68	.022
Mobility	−.75	.004	−1.42	< .001	−.68	.059

no-PTSD: n = 490; PTSD: n = 60; CPTSD: n = 78.

outcome that has previously been neglected in the literature. Patients with CPTSD reported significantly higher severity of comorbid symptoms than patients with PTSD and no-PTSD and suffered from more comorbid mental health diagnoses than the other groups. Moreover, they have higher levels of qualitative and quantitative work-related impairment.

A prevalence of 13.3% CPTSD and 9.5% PTSD was found among the current sample of patients of a psychosomatic rehabilitation clinic, which is distinctly lower than in previous investigations with clinical samples (53.1–61.1% CPTSD vs. 7.9–37.0% PTSD) (Cloitre et al., 2018; Hyland, Brewin, et al., 2017; Hyland, Shevlin, Elklit, et al., 2017; Karatzias et al., 2016). However, previous studies recruited samples via specialized trauma treatment centres (Cloitre et al., 2018; Karatzias et al., 2016), included only patients with a PTSD diagnosis (Hyland, Shevlin, Brewin, et al., 2017) or survivors of childhood sexual abuse (Hyland, Shevlin, Elklit, et al., 2017). The prevalence rates in the current sample of psychosomatic patients are comparable to those found in a trauma-exposed community sample (12.9% CPTSD vs. 5.3% PTSD) (Cloitre et al., 2018). Thus, the rates of CPTSD compared to PTSD have been higher in clinical and community samples, suggesting that CPTSD may be a distinctly more prevalent condition than PTSD.

We found that CPTSD patients were significantly more impaired than PTSD and no PTSD patients in all dimensions of psychopathological symptoms (SCL-90 subscales). Our findings add to the body of evidence demonstrating that CPTSD is associated with substantial psychological distress and can be distinguished from PTSD based on higher levels of symptom burden (Elklit et al., 2014; Hyland et al., 2018; Karatzias et al., 2017). It can be assumed that the discrepancy in profiles of impairment between CPTSD and PTSD are related to the fact that CPTSD is conceptualized as a broader clinical disorder that involves multiple domains of emotion regulation, identity and interpersonal functioning. The current findings suggest that in order to treat future patients with a diagnosis of CPTSD, clinical interventions tailored to address its specific symptom profile are needed.

Participants suffering from CPTSD received more comorbid diagnoses compared to those with PTSD or no PTSD. The discrepancy was especially visible for comorbid personality disorders (22.73% CPTSD vs. 6.35% PTSD), substance abuse (27.27% CPTSD vs.14.29% PTSD), and affective disorders (84.09% CPTSD vs. 74.60% PTSD). Phobic and other anxiety disorders were highly prevalent in all participants suffering from posttraumatic stress (36.36% CPTSD vs. 38.10% for PTSD) and thus don't seem to distinguish these groups among psychosomatic rehabilitation patients. These results align with findings in a sample of trauma treatment seeking participants where higher levels of dissociation, depression and borderline symptoms were observed in CPTSD compared to PTSD patients (Hyland et al., 2018). Similarly, CPTSD patients reported more symptoms of dysthymia than PTSD patients Hyland, Shevlin, Elklit, et al. (2017). However, contrary to the current results, the latter study found that anxiety was more strongly associated with PTSD than CPTSD, which may be related to the different patient groups (trauma patients vs. psychosomatic patients). The higher comorbidity rate with personality disorders in CPTSD compared to PTSD patients is likely associated with the conceptual overlap of disturbances in self-organization and borderline personality disorder. Finally, the high comorbidity of CPTSD and substance abuse could represent a maladaptive coping strategy for problems associated with the disorder. Due to their higher symptom burden, patients with CPTSD may have a stronger tendency to self-medicate than patients suffering from PTSD.

It is noteworthy that only 15.9% of patients that screened positive for PTSD and 30.7% of CPTSD patients indeed had a clinical diagnosis of PTSD, a

finding which highlights the fact that PTSD is severely underdiagnosed by clinicians in the psychosomatic setting (Ebbinghaus, Denis, & Biesold, 2014). Psychosomatic clinics would benefit from introducing routine screenings for PTSD and CPTSD in order to reduce the rate of undetected disorders and to be able to offer disorder-specific interventions.

Importantly, this study for the first time evaluated qualitative and quantitative differences in work-related functional impairment between the two diagnoses of PTSD and CPTSD. The results regarding quantitative working capacity indicated that patients suffering from CPTSD were more often unable to work compared to those with PTSD or no PTSD, both before and after treatment. The working status of CPTSD patients changed little from the beginning (87.5%) to the end of rehabilitation (86.4%). In patients with PTSD we observed a larger reduction from 74.6% to 66.7% whereas in those with no PTSD we found a reduction from 60.5% to 54.6% incapacity. These pre-post treatment comparisons suggest that the rehabilitation measures applied were less effective in restoring work capacity in CPTSD patients and further stress the need for tailored interventions for patients suffering from CPTSD, not only to address their unique symptom spectrum but also to increase their work capacity. The quantitative working capacity rating for the general labour market, CPTSD patients (25.0%) received a suspended working capacity of less than three hours per day more than twice as often as PTSD patients (9.5%) and more than three times as often as no-PTSD patients (7.3%). More specifically, we found that CPTSD patients suffered from greater work-related functional impairment.

In terms of the qualitative working capacity CPTSD patients were significantly more impaired than the PTSD patients and no-PTSD patients in all dimensions except mobility. Therefore, from a sociomedical point of view the subgroup of CPTSD patients represents a high-risk population that should be identified at an early stage of the treatment process in order to support them in maintaining earing capacity by targeted, perhaps long-term interventions (e.g. case management). There were no significant differences between the no PTSD and PTSD groups. However, the no-PTSD group is not a healthy sample but patients with other serious mental disorders, which might explain the lack of group differences in terms of working capacity.

There are several limitations associated with the current study. First, it is possible that self-reported screening to assess symptom endorsement as opposed to clinical interview may result in an overestimation of prevalence rates. Second, the participants were patients of a psychosomatic rehabilitation clinic and therefore generalization of the findings to other patient groups or to the general population is limited. Third, PTSD was not assessed with an instrument designed for capturing the ICD-11 diagnosis. Today's standard instrument, the International Trauma Questionnaire ITQ (Cloitre et al., 2018), was still under development when the current study commenced. However, the IES-R is a well-known measure to assess PTSD according to ICD-10 and it was recently shown its items include the symptom criteria of the ICD-11 concept and that it predicts trauma-related outcomes (Hyland, Brewin, et al., 2017). Nevertheless, a replication of the current results using ICD-11-specific instruments is indicated.

Overall, our findings add to a growing body of evidence which demonstrates that CPTSD is relatively common even in a sample that is not trauma-specific. The new diagnosis was associated with substantially heightened psychiatric distress compared to its sibling diagnosis. Moreover, CPTSD patients were shown to be a particularly vulnerable patient group with regard to poor work-related outcomes. Timely referral for appropriate treatment and vocational rehabilitation may improve the chances of a successful integration into the labour market. Therapeutic interventions for CPTSD patients in the rehabilitation context should explore how dysfunctional schemata related to affective dysregulation and a negative self-concept in CPTSD patients manifest in work-related impairments. Difficulties that can be modified in therapy should be discriminated from those representing enduring capacity restrictions. For example, if a patient attempts to compensate a negative self-concept with fulfiling excessive demands at work, the ability to distance him/herself from this work could be trained. If this is impossible in the current position, a professional reorientation may be considered. Future research that explores the effectiveness of specific intervention strategies is indicated.

Disclosure statement

No potential conflict of interest was reported by the authors.

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