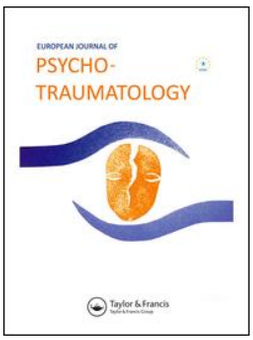

European Journal of Psychotraumatology

ISSN: 2000-8198 (Print) 2000-8066 (Online) Journal homepage: https://www.tandfonline.com/loi/zept20

Associations between perceived social support, posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD): implications for treatment

Natalie Simon, Neil P. Roberts, Catrin E. Lewis, Marieke J. van Gelderen & Jonathan I. Bisson

To cite this article: Natalie Simon, Neil P. Roberts, Catrin E. Lewis, Marieke J. van Gelderen & Jonathan I. Bisson (2019) Associations between perceived social support, posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD): implications for treatment, European Journal of Psychotraumatology, 10:1, 1573129, DOI: 10.1080/20008198.2019.1573129

To link to this article: https://doi.org/10.1080/20008198.2019.1573129

Published online: 13 Feb 2019.

EUROPEAN JOURNAL OF PSYCHOTRAUMATOLOGY
2019, VOL. 10, 1573129
https://doi.org/10.1080/20008198.2019.1573129

EUROPEAN JOURNAL OF PSYCHO-TRAUMATOLOGY
THE OFFICIAL JOURNAL OF THE EUROPEAN SOCIETY FOR TRAUMATIC STRESS STUDIES

Taylor & Francis
Taylor & Francis Group

CLINICAL RESEARCH ARTICLE

OPEN ACCESS Check for updates

Associations between perceived social support, posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD): implications for treatment

Natalie Simon [a], Neil P. Roberts [a,b], Catrin E. Lewis [a], Marieke J. van Gelderen [c,d] and Jonathan I. Bisson [a]

[a]Division of Psychological Medicine and Clinical Neurosciences, Cardiff University School of Medicine, Cardiff, UK; [b]Psychology and Psychological Therapies Directorate, Cardiff and Vale University Health Board, Cardiff, UK; [c]Foundation Centrum '45, partner in Arq Psychotrauma Expert Group, Leiden University Medical Center, Leiden, the Netherlands; [d]Foundation Centrum '45, Leiden University Medical Center, Oegstgeest, the Netherlands

ABSTRACT

Background: Perceived social support (PSS) is one of the most important risk factors for the onset and maintenance of posttraumatic stress disorder (PTSD) symptoms, however the relationship between PSS and Complex PTSD (CPTSD) is unknown. The evidence-base for CPTSD treatment is currently lacking, though increasingly important given the recent publication of the ICD-11, which now allows for a formal diagnosis of CPTSD.
Objective: This research aims to develop understanding of the relationship between PSS and CPTSD with a view to informing the development of new and existing treatments.
Method: A cross-sectional study was undertaken with 246 individuals recruited to the National Centre for Mental Health (NCMH) cohort. Measures of PSS and PTSD/CPTSD were undertaken with this clinical sample and linear and logistic regression were conducted to assess for associations between PSS and the PTSD symptom clusters of DSM-5 and ICD-11, and to explore the predictive utility of any PSS association on the likelihood of a CPTSD presentation.
Results: It was found that individuals with a presentation of CPTSD tend to exhibit lower levels of PSS, compared with individuals not presenting with CPTSD, and lower PSS had a statistically significant unique association with the likelihood of presenting with CPTSD.
Conclusions: Intervention aiming to improve PSS could be particularly helpful for some individuals with CPTSD, especially those with disturbances in relationships, and there is opportunity to develop skills training within a phase-based approach to treatment that targets factors related to PSS.

Las asociaciones entre el apoyo social percibido, transtorno de estrés postraumático (TEPT) y TEPT complejo (TEPTC): implicancias para el tratamiento

Antecedentes: El apoyo social percibido (ASP) es uno de los factores de riesgo más importantes para el inicio y mantención de los síntomas del trastorno de estrés postraumático (TEPT), sin embargo se desconoce la relación entre ASP y TEPT Complejo (TEPTC). Actualmente faltan tratamientos basados en la evidencia para TEPTC, a pesar de la importancia creciente dada la reciente publicación de la CIE-11, que permite el diagnóstico formal de TEPTC.
Objetivo: Esta investigación pretende desarrollar una comprensión de la relación entre el ASP y TEPTC con el fin de informar la existencia de tratamientos nuevos y ya existentes.
Método: Se realizó un estudio transversal con 246 individuos reclutados de una cohorte del Centro Nacional de Salud Mental (NCMH por sus siglas en inglés. Las medidas de ASP y TEPT/TEPTC fueron realizadas con esta muestra clínica y se condujo una regresión lineal y logística para evaluar la asociación entre ASP y síntomas de TEPT de los grupos del DSM-5 y CIE-11, y explorar la utilidad predictiva de cualquier asociación de ASP en la probabilidad de presentación de un TEPTC.
Resultados: Se encontró que individuos con una presentación de TEPTC tendían a mostrar niveles más bajos de ASP, comparados con individuos que no se presentaban con TEPTC, y ASP más bajos tenían una asociación única estadísticamente significativa con la probabilidad de presentarse con TEPTC.
Conclusiones: La intervención que pretende mejorar el ASP podría ser particularmente de ayuda para algunos individuos con TEPTC, especialmente aquellos con alteraciones en las relaciones, y existe oportunidad de desarrollar entrenamiento en destrezas con una aproximación basado en fases para tratar aquellos factores claves relacionados con ASP.

ARTICLE HISTORY
Received 18 October 2018
Revised 28 November 2018
Accepted 10 January 2019

KEYWORDS
Posttraumatic stress disorder; PTSD; complex posttraumatic stress disorder; CPTSD; perceived social support; stress disorders; posttraumatic; social support

PALABRAS CLAVES
Trastorno de Estrés Postraumático; TEPT; Trastorno de Estrés Postraumático Complejo; TEPTC; Apoyo Social Percibido; Trastorno de Estrés; Postraumático; Apoyo Social

关键词
创伤后应激障碍; PTSD; 复杂创伤后应激障碍; CPTSD; 感知社会支持; 应激障碍; 创伤后; 社会支持

HGHLIGHTS

- Individuals with a presentation of Complex Posttraumatic Stress Disorder (CPTSD) tend to exhibit particularly low levels of perceived social support (PSS), compared with individuals not presenting with CPTSD.
- Lower PSS was found to have a statistically significant unique association with the likelihood of presenting with CPTSD.
- Intervention aiming to improve PSS could be particularly helpful for some individuals with CPTSD, especially those with disturbances in relationships.

CONTACT Natalie Simon SimonN2@cardiff.ac.uk Hadyn Ellis Building, Maindy Road, Cardiff, CF24 4HQ, UK
Work conducted at the Division of Psychological Medicine and Clinical Neurosciences, Cardiff University School of Medicine, Hadyn Ellis Building, Maindy Road, Cardiff, CF24 4HQ

感知社会支持、创伤后应激障碍（PTSD）和复杂PTSD（CPTSD）之间的关联：对治疗的影响

背景：感知社会支持（PSS）是创伤后应激障碍（PTSD）症状产生和维持的最重要的风险因素之一，然而PSS与复杂PTSD（CPTSD）之间的关系尚不清楚。目前缺乏CPTSD治疗的证据基础。随着ICD-11最近出版允许对CPTSD进行正式诊断，了解CPTSD治疗的证据基础显得越来越重要。
目的：本研究旨在了解PSS与CPTSD之间的关系，以期为新的和现有的治疗方法的发展提供信息。
方法：246名被招募到国家精神健康中心（NCMH）队列研究的人参与了此横断研究。对该临床样本进行PSS和PTSD/CPTSD的测量，并进行线性和logistic回归以评估PSS与DSM-5和ICD-11的PTSD症状簇之间的关联，并探索这些关联对CPTSD可能性的预测效用。
结果：与没有CPTSD的个体相比，具有CPTSD表现的个体倾向于表现出较低水平的PSS。并且较低的PSS与出现CPTSD的可能性具有统计学显著的独特关联。
结论：旨在改善PSS的干预对于某些患有CPTSD的患者尤其有帮助，特别是那些人际关系困扰的个体。有机会在阶段性的治疗方法中开发针对PSS相关的因素的技能培训。

1. Introduction

The recently published eleventh edition of the International Classification of Diseases ICD-11 (WHO, 2018) allows for the diagnosis of a new condition, complex posttraumatic stress disorder (CPTSD), in addition to posttraumatic stress disorder (PTSD). Exposure to an extreme traumatic event, re-experiencing, avoidance and hyperarousal are core features of both the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) and ICD-11 PTSD. The criteria for DSM-5 PTSD also include symptoms associated with more complex presentations such as exaggerated negative beliefs and expectations, distorted cognitions manifesting in self-blame, and feelings of detachment or estrangement from others (Friedman, 2013; Karatzias et al., 2016). In contrast, the presence of 'disturbances in self-organization' (DSO), in the form of affective dysregulation, negative self-concept, and disturbances in relationships, in addition to the symptoms of PTSD, results in an ICD-11 diagnosis of CPTSD as opposed to PTSD. These DSO symptoms contribute to the conceptualization of CPTSD as a clinical disorder, characterizing trauma impact on an individual's emotion regulation, identity and interpersonal domains, compared with PTSD, which is conceptualized as a fear-based disorder (Bisson, 2013; Hyland et al., 2017).

It is widely accepted that poor perceived social support is one of the most important risk factors for the onset and maintenance of PTSD symptoms (Brewin, Andrews, & Valentine, 2000; Ehlers & Clark, 2000; Holeva, Tarrier, & Wells, 2001; Ozer, Sr., Lipsey, & Weiss, 2003; Robinaugh et al., 2011), though the association between social support and CPTSD is not yet known. Social support is multi-dimensional, with a distinction made in the literature between the actual support an individual receives, and their perceived availability of support. Though the relationship between the two constructs is contested in the literature, perceived social support has been shown to be more closely related to an individual's ability to adjust and cope with stress, compared with ratings of received social support (Norris & Kaniasty, 1996). Explanatory models for the widely recognized association between social support and PTSD symptoms include: 'social causation' models, such as the stress-buffering hypothesis (Cohen & Wills, 1985), based on the assumption that lack of social support may precede and contribute to increases in psychological distress following trauma; 'social erosion' models, where an individual's social support resource is thought to decline due to psychological distress following trauma (Kaniasty & Norris, 2008); and attachment theory, whereby social cognition, developed in infancy, mediates the relationship between trauma and PTSD symptoms (Bryant, 2016; Woodhouse, Ayers, & Field, 2015). It is already known that treatments that help develop skills likely to be associated with improved ability to access social support are beneficial to those with more complex presentations of PTSD (Cloitre, Koenen, Cohen, & Han, 2002). Further insight into the associations between social support and different profiles of PTSD and CPTSD may have important implications for the development of more effective treatments.

Given the nature of the more 'complex' posttraumatic stress symptoms, such as exaggerated negative beliefs and expectations, and feelings of detachment or estrangement from others, it seems plausible that social support/perceived social support would play a role in, and therefore be closely associated with, these symptoms, to a greater extent than with the 'core' symptoms of PTSD, with respect to both DSM-5 and ICD-11 classification systems. Indeed, an association between CPTSD and higher levels of functional impairment, particularly family and relationship problems, has already been shown (Karatzias, Shevlin, et al., 2018). This study therefore aimed to investigate the association between perceived social support (PSS) and presentations of PTSD, and for the first time, to our knowledge, the association between PSS and CPTSD. We hypothesized there would be lower levels of PSS reported for a CPTSD group compared with a non-CPTSD group. Unlike ICD-11, which allows for a distinct CPTSD diagnosis, DSM-5 does not. However, the expansion of PTSD diagnostic

criteria in the fifth edition of DSM has resulted in the inclusion of some symptoms that overlap with those of CPTSD (Friedman, 2013; Powers et al., 2017). Therefore, we also set out to examine the relationship between DSM-5 and ICD-11 PTSD symptom clusters and PSS, hypothesizing a greater association between PSS and the DSO symptom clusters, compared with the 'core' PTSD symptom clusters. Being an exploratory cross-sectional study, we were able to consider these symptom clusters of DSM-5 and ICD-11 as independent variables, with PSS being the dependent variable, but also to examine PSS as an independent variable, along with certain demographic variables, and whether it was uniquely associated with the likelihood of a CPTSD diagnosis.

2. Methods

2.1. Participants

This study was cross-sectional in its design, with participants recruited to the Welsh Government-funded National Centre for Mental Health (NCMH) cohort, via primary and secondary mental health services, and social and other media, including adverts across the third sector. Participants were aged 16 or older, reporting either that they had previously been given a diagnosis of PTSD, or they reported that they had been exposed to a traumatic event and then screened positively for PTSD based on the Trauma Screening Questionnaire (Brewin et al., 2002). Individuals were excluded if they were unable to read and write in English or were recently admitted to hospital or intensive home treatment due to a disturbed mental state. All individuals reported exposure to a traumatic event fulfilling the requirements for a diagnosis of PTSD and CPTSD under DSM-5 and ICD-11. The NCMH cohort study has been granted ethical approval by Wales Research Ethics Committee 2.

Data from 246 individuals was available for the measures of interest, the Clinician Administered PTSD Scale for DSM-5 (CAPS-5; Weathers et al., 2013) and the Multidimensional Scale for Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988), and data was also available from a proportion of these individuals (n = 187) for another main measure of interest, the International Trauma Questionnaire ITQ (Cloitre et al., 2018; Hyland et al., 2017). The dataset with 246 individuals consisted of an equal number of males and females, with 123 males (50.0%), aged between 16 and 75 years (M = 47.37, SD = 12.57), predominantly White in ethnicity (n = 235; 95.5%). Most participants were unemployed (n = 171; 69.5%), roughly half had higher education attainment (n = 143; 58.1%), with a similar number of individuals married or cohabiting (n = 119; 48.4%), as were single, widowed, divorced or separated. At the time of assessment, 158 (64.2%) of the 246 individuals met a PTSD diagnosis according to DSM-5 on the basis of CAPS-5 assessment. Of the 187 individuals who also completed the ICD-11 ITQ, 94 (50.3%) met ICD-11 CPTSD diagnosis, 29 (15.51%) met ICD-11 diagnostic criteria for PTSD, and 112 (59.9%) met a PTSD diagnosis according to DSM-5.

2.2. Measures

The MSPSS is a widely used 12-item self-report measure, shown to be reliable (α = .86) and valid in a variety of populations (Bruwer, Emsley, Kidd, Lochner, & Seedat, 2008; Canty-Mitchell & Zimet, 2000; Zimet et al., 1988). The measure is not anchored to a timeframe and considers current perception of social support, using a 7-point Likert scale, anchored by 'Very strongly disagree' (1) to 'Very strongly agree' (7), to measure the subjective assessment of adequacy of social support from family, friends and partners.

To assess lifetime exposure to traumatic events, a modified version of the Life Events Checklist for DSM-5 (LEC-5) was used (Weathers et al., 2013). The modification was to include two additional items assessing exposure to childhood physical abuse and childhood sexual abuse or molestation.

The CAPS-5 was used to assess PTSD. The CAPS-5 is widely used in clinical, research and forensic settings and is recognized as a benchmark criterion measure of PTSD, with strong test-retest reliability ($_K$ = .83), high internal consistency (α = .88) and good convergent validity with other measures (Weathers et al., 2018). CAPS-5 has a standardized symptom severity scoring system, combining frequency and intensity information in to a single 5-point (0–4) severity scale, with anchor points: 0 (absent); 1 (mild/subthreshold); 2 (moderate/threshold); 3 (severe/markedly elevated); and 4 (extreme/incapacitating). Symptom cluster severity scores are sums of the individual item severity scores per cluster, with Criterion B (re-experiencing) being a sum of the severity scores for five items, Criterion C (avoidance) being a sum of two items, Criterion D (negative alterations in cognitions and mood) being a sum of seven items, and Criterion E (hyperarousal) being a sum of six items. A symptom is considered present if the corresponding item severity score is rated ≥ 2, with additional items requiring a trauma-relatedness rating of 'definite' or 'probable'. DSM-5 requires the presence of at least one Criterion B symptom, one Criterion C symptom, two Criterion D symptoms, and two Criterion E symptoms. With the additional requirement of presence of Criterion F and G, disturbance of at least one month, and disturbance causing significant distress or functional impairment, respectively.

The ITQ is a self-report measure of the ICD-11 diagnoses of PTSD and CPTSD (Cloitre et al., 2018).

Respondents rate how much they have been bothered by the individual symptoms, and are instructed to answer the DSO items in relation to how they typically feel, think about themselves and relate to others. Responses are rated using a 5-point Likert scale, anchored by 'Not at all' (0) to 'Extremely' (4). PTSD diagnostic criteria requires a score of ≥ 2 ('Moderately') for at least one of two symptoms from the 'core' clusters: re-experiencing of the traumatic event in the here and now (Re), avoidance of traumatic reminders (Av), and a persistent sense of current threat (Th). CPTSD diagnosis requires PTSD criteria are met and endorsement of a moderate level of severity for one of each of the DSO symptom clusters, defined as summed score that equals a score of ≥ 2 for each of the items in the clusters: a summed total score of ≥ 10 for five items reflecting hyperactivation, or a summed total score of ≥ 8 for four items reflecting hypoactivation (AD); a summed total score ≥ 8 for four items reflecting negative self-concept (NSC); and a summed total score ≥ 6 for three items reflecting disturbances in relationships (DR). There is also a requirement for the presence of functional impairment associated with both sets of symptoms for a diagnosis of PTSD and CPTSD. The ITQ has been validated in several studies and has strong psychometric properties (α = .87) (Cloitre et al., 2018; Hyland et al., 2017; Karatzias et al., 2016).

2.3. Analysis

Analyses were performed using the Statistical Package for Social Science, SPSS (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.). Means and standard deviations were calculated for continuous variables and frequencies (%) for categorical variables. To explore group differences on the PSS, an independent-samples *t*-test was conducted. To explore whether total score on the PSS was related to DSM-5 PTSD symptom clusters, ICD-11 PTSD symptom clusters, gender, age, higher education, current employment and living arrangements, two separate multiple linear regression analyses were conducted: the first with DSM-5 PTSD symptom clusters, the second with ICD-11 PTSD symptom clusters. To explore the unique associations of PSS, gender, age, living arrangements, level of education and employment, with the likelihood of a CPTSD presentation, direct logistic regression was performed, the dependent variable being a diagnosis of ICD-11 CPTSD, the reference group being no diagnosis of ICD-11 CPTSD. Further multiple regression analyses were undertaken as post-hoc analyses, to further explore an unexpected finding relating to an ICD-11 PTSD AD 'affective dysregulation' symptom cluster.

3. Results

Table 1 presents demographic characteristics of the sample. An independent-samples *t*-test was conducted to compare PSS score in the CPTSD and not CPTSD groups. The CPTSD group (M = 3.83, SD = 1.44) reported significantly lower levels of PSS than the not CPTSD group (M = 4.50, SD = 1.50); t (188) = 3.12, p < .001, one-tailed. The mean total MSPSS score for all participants was 4.16 (SD = 1.50).

To test if DSM-5 PTSD symptom clusters were associated with PSS, multiple linear regression was conducted with the following variables: DSM-5

Table 1. Participant demographic variables across groups.

	ICD-11 ITQ completers (n = 187)		
Variable	ICD-11 Not CPTSD (n = 93)	ICD-11 CPTSD (n = 94)	DSM-5 CAPS completers (n = 246)
ICD-11 NoPTSD Diagnosis (%)	64 (34.22)	_	
ICD-11 PTSD Diagnosis (%)	29 (15.51)	_	
ICD-11 CPTSD Diagnosis (%)	_	94 (50.3)	
DSM-5 PTSD Diagnosis (%)	112 (59.9)		158 (64.2)
Mean age at time of assessment (SD)	48.71 (13.69)	47.58 (12.18)	47.37 (12.57)
Gender			
Male (%)	46 (49.5)	48 (51.1)	123 (50.0)
Female (%)	47 (50.5)	46 (48.9)	123 (50.0)
Ethnicity (%)			
White	91 (97.8)	89 (94.7)	235 (95.5)
Asian	1 (1.1)	0	1 (0.4)
Mixed	0	5 (5.3)	8 (3.3)
Other	1 (1.1)	0	2 (0.8)
Employment (%)			
Unemployed	54 (58.1)	68 (72.3)	171 (69.5)
Employed	39 (41.9)	26 (27.7)	75 (30.5)
Living arrangements (%)			
Married or Cohabiting	56 (60.2)	39 (41.5)	119 (48.4)
Single or Widowed or Divorced or Separated	37 (39.8)	55 (58.5)	127 (51.6)
Higher Education, A levels and above (%)			
Higher Education	56 (60.2)	53 (56.4)	143 (58.1)
No Higher Education	37 (39.8)	41 (43.6)	103 (41.9)

DSM-5 = fifth edition of the Diagnostic and Statistical Manual of Mental Disorders; ICD-11 = eleventh edition of the International Classification of Diseases; CAPS = Clinician-Administered PTSD Scale for DSM-5; ITQ = the International Trauma Questionnaire.

Table 2. Summary of multiple linear regression analyses for DSM-5 criteria and demographics as correlates of perceived social support (PSS).

Predictor	Beta	*p*-value
Gender	.074	.239
Age at time of assessment	.03	.643
Marital status	.253	.000
Level of education	.047	.439
Employment status	.132	.040
DSM-5 PTSD B criteria	−.141	.051
DSM-5 PTSD C criteria	−.05	.486
DSM-5 PTSD D criteria	−.181	.017
DSM-5 PTSD E criteria	.103	.157

DSM-5 = fifth edition of the Diagnostic and Statistical Manual of Mental Disorders

PTSD criterion B; DSM-5 PTSD criterion C; DSM-5 PTSD criterion D; DSM-5 PTSD criterion E; gender; age; level of education; status of employment; and marital status. The results indicated that these variables explained 19.5% of the variance in the model (R^2 = 19.5, $F(9, 236) = 6.348$, $p < .001$). Table 2 presents a summary of the findings and shows that the presence of the DSM-5 PTSD D criteria significantly correlated with a lower level of PSS, ($\beta = -0.181$, $p < .05$). Being married or cohabiting significantly correlated with a higher level of PSS ($\beta = 0.253$, $p < .001$), and being employed was found to significantly correlate with a higher level of PSS ($\beta = 0.132$, $p < .05$).

To test if ICD-11 PTSD symptom clusters associated with PSS, a separate multiple linear regression analysis was performed, with the following variables: ICD-11 PTSD Re; ICD-11 PTSD Av; ICD-11 PTSD Th; ICD-11 PTSD AD; ICD-11 PTSD NSC; ICD-11 PTSD DR; gender; age; level of education; status of employment; and marital status. The results indicated these variables explained 19.4% of the variance of this model ($R^2 = 19.4$, $F(11,175) = 3.832$, $p < .001$). Table 3 presents a summary of the findings, showing that the presence of ICD11 DR was found to significantly correlate with a lower level of PSS ($\beta = -0.257$, $p < .01$). Interestingly, presence of ICD11 AD was found to significantly correlated with a higher level of PSS ($\beta = 0.189$, $p < .05$). Being married or cohabiting was found to significantly correlate with a higher level of PSS ($\beta = 0.227$, $p < .005$).

Table 3. Summary of multiple linear regression analyses for ICD-11 criteria and demographics as correlates of perceived social support (PSS).

Predictor	Beta	*p*-value
Gender	0.008	0.915
Age at time of assessment	−0.033	0.669
Marital status	0.227	0.003
Level of education	0.017	0.809
Employment status	0.096	0.200
ICD-11 PTSD Re criteria	0.017	0.834
ICD-11 PTSD Avoidance (Av)	−0.510	0.544
ICD-11 PTSD Th criteria	0.004	0.958
ICD-11 PTSD AD criteria	0.189	0.038
ICD-11 PTSD NSC criteria	−0.157	0.059
ICD-11 PTSD DR criteria	−0.257	0.007

ICD-11 = eleventh edition of the International Classification of Diseases; Re = re-experiencing of the traumatic event in the here and now; Av = avoidance of traumatic reminders; Th = a persistent sense of current threat; AD = hyperactivation/hypoactivation; NSC = negative self-concept; DR = disturbances in relationships.

To test the impact of several factors on the likelihood that individuals would present with a diagnosis of CPTSD (N = 94), as compared to ICD11 PTSD (N = 93), direct logistic regression was performed. The model contained six independent variables (PSS, gender, age, level of education, status of employment, marital status). This model was found to be statistically significant, $\chi^2(6, N = 187) = 14.89$, $p < .05$, indicating that the model was able to distinguish between respondents who presented with CPTSD and those who presented with PTSD. The model as a whole explained between 7.7% (Cox & Snell R^2) and 10.2% (Nagalkerke R^2) of the variance in presentation of PTSD/CPTSD, and correctly classified 58.8% of cases. As shown in Table 4, PSS made a unique statistically significant contribution to the model, therefore suggesting it to be significantly related to a diagnosis of CPTSD (OR = 0.78, $p < .05$).

Post-hoc analyses were conducted to offer an explanation to the surprising finding that higher levels of PSS significantly correlated with the presence of the ICD11 'affective dysregulation' AD cluster. The ITQ AD cluster consists of two elements: hyper-activation 'when I am upset, it takes me a long time to calm down'; and hypo-activation 'I feel numb or emotionally shut down'. We hypothesized that PSS would be more closely associated with hypo-activation than with hyper-activation and set out to examine if this was the case. Two multiple linear regression analyses were performed. The first examined PSS with the ITQ AD hyper-activation, plus the following variables: ITQ Re; ITQ Av; ITQ Th; ITQ NSC; ITQ DR; gender; age; level of education; status of employment; and marital status. The second examined PSS with the ITQ AD hypo-activation, plus the following variables: ITQ Re; ITQ Av; ITQ Th; ITQ NSC; ITQ DR; gender; age; level of education; status of employment; and marital status. The results of the first analysis indicated the variables explained 23.3% of the variance of the model (R^2 = 23.3, $F(11,175) = 4.824$, $p < .001$) and, as predicted, presence of the ITQ AD hyper-activation was found to signifi-

Table 4. Direct logistic regression of variables associated with likelihood of reporting symptoms of CPTSD.

			95.0% CI for Odds Ratio	
Variable	*p*-value	Odds Ratio	Lower	Upper
Perceived Social Support (PSS)	.025	.783	.632	.970
Female Gender	.592	.842	.450	1.58
Age at time of assessment	.415	.990	.965	1.015
Higher Education	.884	.955	.510	1.786
Married/Cohabiting	.177	.642	.337	1.222
Currently employed	.189	.635	.323	1.250

cantly correlate with a higher level of PSS (β = 0.291, $p < .001$). The results of the second analysis indicated the variables explained 17.6% of the variance of the model ($R^2 = 17.6$, $F(11,175) = 3.39$, $p < .001$) and, as predicted, the presence of the ITQ AD hypo-activation was associated with a lower level of PSS, though not to statistical significance ($p = .505$).

4. Discussion

The findings of this exploratory study suggest individuals with a presentation of CPTSD tend to exhibit lower levels of PSS, compared with individuals not presenting with CPTSD. Furthermore, though the odds ratio was found to be fairly small, lower PSS was significantly associated with the likelihood of presenting with CPTSD as compared to PTSD (OR = 0.78, $p < .05$).

We hypothesized a role for PSS in the presentation of the 'complex' symptom clusters. We found partial support for this given our findings that lower levels of perceived social support significantly associated with the presence of the 'negative alterations of cognitions and mood' symptom cluster, Criterion D, within DSM-5 PTSD. The picture that emerged for ICD-11 PTSD 'disturbances in self-organization' symptom clusters was less straightforward. Individuals with lower levels of perceived social support were more likely to report the presence of the 'disturbances in relationships' symptom cluster, to a statistically significant level, and they were also more likely to report the presence of the 'negative self-concept' cluster, though the latter was not statistically significant. Contrary to our hypothesis, *higher* levels of perceived social support significantly associated with the presence of the 'affective dysregulation' cluster. As expected, individuals with lower levels of perceived social support were also less likely to be married or cohabiting, and were less likely to be employed, though these factors, along with gender, age and level of education, were not found to be uniquely associated with presentations of CPTSD.

The finding of significant associations between PSS and the DSO ICD-11 CPTSD symptom clusters, compared with non-significant associations between PSS and ICD-11 PTSD symptom clusters, suggests PSS may be particularly important in the presentation of CPTSD compared with PTSD. The finding contributes to literature which conceptualizes CPTSD as a disorder characterizing trauma impact on an individual's emotion regulation, identity and interpersonal domains, being distinct from PTSD, which is conceptualized as a fear-based disorder (Bisson, 2013; Hyland et al., 2017). The finding that only one of the DSM-5 PTSD symptom clusters, Criterion D, was found to be statistically significantly associated with PSS, that cluster being the more 'complex' of the symptom clusters, is consistent with this and adds to existing literature that considers DSM-5 PTSD to be encapsulating presentations of PTSD and CPTSD within one diagnosis (Bisson, 2013). The DSM-5 PTSD B, C and E criteria, like the closely related ICD-11 PTSD clusters, were not associated with PSS, providing further support for an association of reduced PSS and greater complexity. Previous research has found PSS to correlate robustly with PTSD symptoms (Brewin et al., 2000; Ozer et al., 2003). The consideration of PTSD as a whole in these studies, using earlier DSM and ICD classification systems may, however, have masked different degrees of association with separate symptom clusters.

The mean total MSPSS score for all participants of 4.16 ($SD = 1.50$) in the present study was lower than MSPSS scores reported in other studies, including those of PTSD sufferers. Shnaider et al. (2017) reported a mean total MSPSS of 4.9 ($SD = 1.2$) in individuals pre-treatment for PTSD. Osman, Lamis, Freedenthal, Gutierrez, and Mcnaughton-Cassill (2014) reported mean MSPSS scores from several studies, ranging from one study with undergraduate student participants with a mean score of 5.80 ($SD = 0.86$), to another study with psychiatric outpatients with schizophrenia and mood disorders with a mean score of 5.00 ($SD = 1.60$). The mean total MSPSS score for the PTSD group in our study was 4.50 ($SD = 1.50$) with the CPTSD group scoring substantially lower, at 3.83 ($SD = 1.46$), suggesting that CPTSD may be associated with particularly low levels of PSS.

Though we cannot determine the direction of association between lower PSS and CPTSD, due to the cross-sectional nature of the study, various explanatory models may help to explain the findings of the current study. Firstly, the importance of social cognition and social bonds in response to traumatic events is widely recognized, drawing on the importance of attachment styles and systems, with increasing evidence that attachment plays an important role in the development and maintenance of PTSD (Bryant, 2016; Woodhouse et al., 2015). The lower levels of PSS found in individuals presenting with CPTSD in the present study may be partly explained by the attachment styles of these individuals through their response to trauma and the world around them. Additional models that might help to explain the present findings include the 'social causation' models, such as the stress-buffering hypothesis (Cohen & Wills, 1985), theories positing the hinderance of negative post-trauma cognitions through greater social support (Ehlers & Clark, 2000). 'Social erosion' models also offer explanation; interpersonal difficulties may increase due to CPTSD symptoms, thereby

having a deleterious effect on social resource and resulting in low levels of PSS (Bryant, 2016; Kaniasty & Norris, 2008; Woodhouse et al., 2015).

We found limited literature on the topic of PSS in relation to presentations of PTSD compared with CPTSD, however we might make inferences from recent research which has focused attention on other factors and their relationship with CPTSD; factors that might be expected to be related to PSS. For example, Karatzias, Shevlin, et al. (2018) demonstrated significant associations between negative trauma-related cognitions about the self, attachment anxiety, expressive suppression and CPTSD. Also, literature reports CPTSD associating with higher levels of functional impairment, particularly family and relationship problems (Karatzias et al., 2017). The present study's finding, that low PSS appears to be characteristic of the CPTSD group, might be explained by this literature. Indeed, if we were to take the factor of negative self-concept, such symptoms are defined in terms of persistent beliefs about oneself as diminished, defeated or worthless, and are accompanied by deep and pervasive feelings of shame, guilt or failure (Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013). Such symptoms may be a consequence of, contributing and/or maintaining factors in one's perception of social support.

The finding that higher levels of perceived social support were significantly related to the presence of the 'affective dysregulation' (AD) cluster is more difficult to explain, though findings of post-hoc analyses did shed some light. The ITQ AD cluster hypo-activation item, 'I feel numb or emotionally shut down', was found to be associated with lower levels of PSS, as we would expect, however the hyper-activation item, 'when I am upset, it takes me a long time to calm down', was associated with higher levels of PSS, resulting in the cluster overall being associated with higher levels of PSS. There are several possible explanations for the association of AD hyper-activation with higher levels of perceived social support. These include the possibility that our findings are due to chance. Different levels of PSS may be causing or resulting from the possible presence of different sub-types within the CPTSD diagnosis. The AD hyper-activation may be a less specific or accurate symptom of CPTSD than other DSO symptoms. Finally, the ITQ questions may be eliciting a different phenomenon than CPTSD AD hyper-activation. Further research will be required to explore this.

4.1. Strengths and limitations of the study

Our findings must be interpreted in the context of strengths and limitations of our work. The MSPSS is a brief measure and is self-reported, though it has been shown to be reliable and valid in a variety of populations (Bruwer et al., 2008; Canty-Mitchell & Zimet, 2000). A widely used measure, it captures an overall rating of PSS, scored from three sub-scale sources: family, friends and significant other. Perceived social support was of interest in the present research and PSS has been shown to be more closely related to an individual's ability to adjust and cope with stress, compared with ratings of actual or received social support (Norris & Kaniasty, 1996). Furthermore, there is debate in the literature regarding the usefulness of ratings of actual or received support, not least due to arguments concerning the subjective nature and accuracy of its measurement. Significant perceived social support has been shown to be only weakly correlated with objective/independent ratings of actual or received support. For example, an average correlation of $r = .35$, $p < .001$ was found in a meta-analysis of 23 studies (Haber, Cohen, Lucas, & Baltes, 2007). This weak correlation implies perception of social support might be determined not only through the appraisal of received social support but also due to other factors, for example negative self-concept. Our understanding in the area of social support would be aided by future research that considers perceived social support with respect to objective measures of received or actual social support and other potential moderators.

The present study considered the overall total MSPSS score, which has been found to be a useful measure of overall functioning and wellbeing (Haber et al., 2007). We did not set out to examine the unique relationships of the various domains of social support captured by the MSPSS with CPTSD, namely support from friends, family and a close other, which may be considered a limitation. Findings of research considering these separate domains and PTSD have shown support from family and friends to be negatively correlated with post-trauma cognitions, and positively associated with PTSD, though social support from a close other was not associated with post-trauma cognitions (Woodward et al., 2015).

The sample of this cross-sectional study was moderate in size and reasonably typical of a more complex PTSD clinical sample, though the vast majority of individuals were White in ethnicity, therefore it is important to be cautious with respect to the generalizability of the study findings. That said, the demographic characteristics are broadly comparable (see Table 1) across the groups, which is a strength in terms of controlling for demographic influences on PSS. There were roughly twice as many individuals not employed, as opposed to employed, at the time of assessment, though this is reasonably typical for a PTSD population and has been reported recently elsewhere (Karatzias et al., 2017).

Another potential limitation of the present study is multiple testing and the fact that we did not strictly

control for the increase in familywise error rate of 0.05 across the statistical analyses. We considered using Bonferroni adjustments but decided against this due to the limitations associated with their use (Nakagawa, 2004; Perneger, 1998), and tried to keep our overall number of analyses reasonably small. Given the cross-sectional nature of this study, we were unable to determine the direction of causality of low levels of PSS. In other words, our findings cannot tell us whether lower levels of perceived social support are preceding and contributing to, or are a consequence of, psychological distress and PTSD/CPTSD symptomatology.

4.2. Clinical and research implications

A statistically significant association was found between PSS and likelihood of presenting with CPTSD, albeit with a small odds ratio (OR = 0.78, $p < .05$), and further research is now urgently required to further explore the association of PSS with PTSD and CPTSD and to develop new, more personalized, treatment approaches informed by this work. Potential fruitful avenues for future research include the relationship of PSS to time since trauma and type of trauma. In Ozer's et al. (2003) meta-analysis, the strongest association between PSS and posttraumatic stress symptoms was when the time since trauma to assessment was longer. Ozer et al. also demonstrated a protective value of PSS post-trauma, particularly following combat trauma, compared with other forms of interpersonal violence. Similarly, Brewin et al. (2000) found this protective element of PSS post-trauma to be strongest following combat trauma.

Our findings suggest lower levels of PSS are more likely to associate with a more complex presentation of PTSD. Further research is required, however the markedly low levels of PSS in the CPTSD group in the present study, and the strong association found between PSS and CPTSD, suggest it is an important issue for clinicians to be aware of and to consider when developing prevention strategies, and assessing and treating individuals with CPTSD (Bisson, 2014; Bisson et al., 2010). There are many reasons why low PSS should be addressed, not least the association of higher levels of PSS with feelings of safety, engagement with treatment and outcomes following treatment (Charuvastra & Cloitre, 2008; Shnaider, Sijercic, Wanklyn, Suvak, & Monson, 2017).

5. Conclusions

PTSD and CPTSD presentation are heterogeneous disorders, and prevention and treatment must, therefore, be adaptive to this heterogeneity. Our results suggest that interventions aiming to improve PSS could be particularly helpful for some CPTSD sufferers, particularly those with disturbances in relationships. It would be valuable to determine if existing effective treatments that target the development of affect regulation and interpersonal skills before trauma-focused therapy impact on levels of PSS, for instance treatments such as Skills Training in Affective and Interpersonal Regulation plus Modified Prolonged Exposure (STAIR/MPE), an evidence-based 2-phase cognitive behavioural treatment (Cloitre et al., 2002). There is an opportunity to develop and enhance skills training by specifically targeting factors relating to PSS, for instance, skills acquisition to enhance opportunities for improved social support and cohesion. This is likely to include key elements of STAIR to help individuals better communicate their distress to/with others and improve their interpersonal skills, but also introduce other components such as compassion-focused work (Karatzias, Hyland, et al, 2018). Interpersonal Psychotherapy (IPT) may also be of relevance, given its goal in mobilizing patients' social supports, and IPT has been suggested to offer help to individuals with PTSD to gain confidence in their social interactions and to gather social support, and in turn feel more able to expose themselves to trauma reminders in treatment (Markowitz et al., 2015).

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This project was supported by the National Centre for Mental Health (NCMH) [grant number 514032]. NCMH is funded by Welsh Government through Health and Care Research Wales.

Data availability

NCMH welcome proposals for collaboration. Further information on the study can be obtained at www.ncmh.info/

ORCID

Natalie Simon http://orcid.org/0000-0001-5712-9460
Neil P. Roberts http://orcid.org/0000-0002-6277-0102
Catrin E. Lewis http://orcid.org/0000-0002-3818-9377
Jonathan I. Bisson http://orcid.org/0000-0001-5170-1243

References

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

Bisson, J. I. (2013). What happened to harmonization of the PTSD diagnosis? The divergence of ICD11 and

DSM5 [editorial]. *Epidemiology and Psychiatric Sciences*, *22*, 205–207.
Bisson, J. I. (2014). Early responding to traumatic events [editorial]. *British Journal of Psychiatry*, *204*, 329–330.
Bisson, J. I., Tavakoly, B., Witteveen, A. B., Ajdukovic, D., Jehel, L., Johansen, V. J., … Olff, M. (2010). TENTS guidelines: Development of post-disaster psychosocial care guidelines through a Delphi process. *The British Journal of Psychiatry: The Journal of Mental Science*, *196*(1): 69
Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*, *68*, 748–766.
Brewin, C. R., Rose, S., Andrews, B., Green, J., Tata, P., Mcevedy, C., … Foa, E. (2002). Brief screening instrument for post-traumatic stress disorder. *British Journal Of Psychiatry*, *181*, 158–162.
Bruwer, B., Emsley, R., Kidd, M., Lochner, C., & Seedat, S. (2008). Psychometric properties of the multidimensional scale of perceived social support in youth. *Comprehensive Psychiatry*, *49*, 195–201.
Bryant, R. A. (2016). Social attachments and traumatic stress. *European Journal of Psychotraumatology*, *7*, 29065.
Canty-Mitchell, J., & Zimet, G. D. (2000). Psychometric properties of the multidimensional scale of perceived social support in urban adolescents. *American Journal of Community Psychology*, *28*, 391–400.
Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annual Review of Psychology*, *59*, 301–328.
Cloitre, M., Garvert, D. W., Brewin, C. R., Bryant, R. A., & Maercker, A. (2013). Evidence for proposed ICD-11 PTSD and complex PTSD: A latent profile analysis. *European Journal of Psychotraumatology*, *4*(1).
Cloitre, M., Koenen, K., Cohen, L., & Han, H. (2002). Skills training in affective and interpersonal regulation followed by exposure: A phase-based treatment for PTSD related to childhood abuse. *Journal of Consulting and Clinical Psychology*, *70*, 1067–1074.
Cloitre, M., Shevlin, M., Brewin, C. R., Bisson, J. I., Roberts, N. P., Maercker, A., … Hyland, P. (2018). The international Trauma questionnaire: Development of a self-report measure of ICD-11 PTSD and complex PTSD. *Acta Psychiatrica Scandinavica*, *138*, 536–546.
Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357.
Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, *38*, 319–345.
Friedman, M. J. (2013). Finalizing PTSD in DSM-5: Getting here from there and where to go next. *Journal of Traumatic Stress*, *26*, 548–556.
Haber, M. G., Cohen, J. L., Lucas, T., & Baltes, B. B. (2007). The relationship between self-reported received and perceived social support: A meta-analytic review. *American Journal of Community Psychology*, *39*, 133–144.
Holeva, V., Tarrier, N., & Wells, A. (2001). Prevalence and predictors of acute stress disorder and PTSD following road traffic accidents: Thought control strategies and social support. *Behavior Therapy*, *32*, 65–83.
Hyland, P., Shevlin, M., Brewin, C. R., Cloitre, M., Downes, A. J., Jumbe, S., … Roberts, N. P. (2017). Validation of post-traumatic stress disorder (PTSD) and complex PTSD using the International Trauma Questionnaire. *Acta Psychiatrica Scandinavica*, *136*, 313–322.
Kaniasty, K., & Norris, F. H. (2008). Longitudinal linkages between perceived social support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. *Journal of Traumatic Stress*, *21*, 274–281.
Karatzias, T., Hyland, P., Bradley, A., Fyvie, C., Logan, K., Easton, P., … Shevlin, M. (2018). Is self-compassion a worthwhile therapeutic target for ICD-11 complex PTSD (CPTSD)? *Behavioural and Cognitive Psychotherapy*, 1–13.
Karatzias, T., Shevlin, M., Fyvie, C., Hyland, P., Efthymiadou, E., Wilson, D., … Cloitre, M. (2016). An initial psychometric assessment of an ICD-11 based measure of PTSD and complex PTSD (ICD-TQ): Evidence of construct validity. *Journal of Anxiety Disorders*, *44*, 73–79.
Karatzias, T., Shevlin, M., Fyvie, C., Hyland, P., Efthymiadou, E., Wilson, D., … Cloitre, M. (2017). Evidence of distinct profiles of posttraumatic stress disorder (PTSD) and complex posttraumatic stress disorder (CPTSD) based on the new ICD-11 trauma questionnaire (ICD-TQ). *Journal of Affective Disorders*, *207*, 181–187.
Karatzias, T., Shevlin, M., Hyland, P., Brewin, C. R., Cloitre, M., Bradley, A., … Roberts, N. P. (2018). The role of negative cognitions, emotion regulation strategies, and attachment style in complex post-traumatic stress disorder: Implications for new and existing therapies. *British Journal of Clinical Psychology*, *57*, 177–185.
Markowitz, J. C., Petkova, E., Neria, Y., Van Meter, P. E., Zhao, Y., Hembree, E., … Marshall, R. D. (2015). Is exposure necessary? A randomized clinical trial of interpersonal psychotherapy for PTSD. *American Journal of Psychiatry*, *172*, 430–440.
Nakagawa, S. (2004). A farewell to Bonferroni: The problems of low statistical power and publication bias. *Behavioral Ecology*, *15*, 1044–1045.
Norris, F., & Kaniasty, K. (1996). Received and perceived social support in times of stress: A test of the social support deterioration deterrence model. *Journal of Personality and Social Psychology*, *71*, 498.
Osman, A., Lamis, D. A., Freedenthal, S., Gutierrez, P. M., & Mcnaughton-Cassill, M. (2014). The multidimensional scale of perceived social support: Analyses of internal reliability, measurement invariance, and correlates across gender. *Journal of Personality Assessment*, *96*, 103–112.
Ozer, E., Sr., B. E. S. T., Lipsey, T., & Weiss, D. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, *129*, 52–73.
Perneger, T. V. (1998). What's wrong with Bonferroni adjustments. *BMJ*, *316*, 1236.
Powers, A., Fani, N., Carter, S., Cross, D., Cloitre, M., & Bradley, B. (2017). Differential predictors of DSM-5 PTSD and ICD-11 complex PTSD among African American women. *European Journal of Psychotraumatology*, *8*(1).
Robinaugh, D. J., Marques, L. M., Traeger, L. N., Marks, E. H., Sung, S. C., Beck, J. G., … Simon, N. M. (2011). Understanding the relationship of perceived social support to post-trauma cognitions and posttraumatic stress disorder. *Journal of Anxiety Disorders*, *25*, 1072–1078.

Shnaider, P., Sijercic, I., Wanklyn, S. G., Suvak, M. K., & Monson, C. M. (2017). The role of social support in cognitive-behavioral conjoint therapy for posttraumatic stress disorder. *Behavior Therapy*, *48*, 285–294.

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013). *The clinician-administered PTSD scale for DSM-5 (CAPS-5)*. Retrieved from http://www.ptsd.va.gov/.

Weathers, F. W., Bovin, M. J., Lee, D. J., Sloan, D. M., Schnurr, P. P., Kaloupek, D. G., ... Marx, B. P. (2018). The clinician-administered PTSD scale for DSM-5 (CAPS-5): Development and initial psychometric evaluation in military veterans. *Psychological Assessment*, *30*(3), 383–395. doi:10.1037/pas0000486

WHO. (2018). *The ICD-11 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines* [Online]. Geneva: WHO. Retrieved from https://icd.who.int/

Woodhouse, S., Ayers, S., & Field, A. P. (2015). The relationship between adult attachment style and post-traumatic stress symptoms: A meta-analysis. *Journal of Anxiety Disorders*, *35*, 103–117.

Woodward, M. J., Eddinger, J., Henschel, A. V., Dodson, T. S., Tran, H. N., & Beck, J. G. (2015). Social support, posttraumatic cognitions, and PTSD: The influence of family, friends, and a close other in an interpersonal and non-interpersonal trauma group. *Journal of Anxiety Disorders*, *35*, 60–67.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, *52*, 30–41.