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The role of negative cognitions, emotion regulation strategies, and attachment style in complex post-traumatic stress disorder: Implications for new and existing therapies

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Objective. We set out to investigate the association between negative trauma-related cognitions, emotional regulation strategies, and attachment style and complex post-traumatic stress disorder (CPTSD). As the evidence regarding the treatment of CPTSD is emerging, investigating psychological factors that are associated with CPTSD can inform the adaptation or the development of effective interventions for CPTSD.

Method. A cross-sectional design was employed. Measures of CPTSD, negative trauma-related cognitions, emotion regulation strategies, and attachment style were completed by a British clinical sample of trauma-exposed patients ($N = 171$). Logistic regression analysis was used to assess the predictive utility of these psychological factors on diagnosis of CPTSD as compared to PTSD.

Results. It was found that the most important factor in the diagnosis of CPTSD was negative trauma-related cognitions about the self, followed by attachment anxiety, and expressive suppression.

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> **Conclusions.** Targeting negative thoughts and attachment representations while promoting skills acquisition in emotional regulation hold promise in the treatment of CPTSD. Further research is required on the development of appropriate models to treat CPTSD that tackle skills deficit in these areas.

Practitioner points

- Results suggest that cognitive-behavioural interventions might be useful for the treatment of CPTSD.
- Targeting negative thoughts and attachment representations while promoting skills acquisition in emotional regulation hold promise in the treatment of CPTSD.

The forthcoming 11th revision of the World Health Organization's International Classification of Diseases (ICD-11) proposes two distinct sibling conditions: post-traumatic stress disorder (PTSD) and complex PTSD (CPTSD). PTSD is comprised of three symptom clusters including (1) re-experiencing of the traumatic event in the here and now, (2) avoidance of traumatic reminders, and (3) a persistent sense of current threat. ICD-11 CPTSD includes the three PTSD clusters and three additional clusters that reflect 'disturbances in self-organization': (1) affective dysregulation, (2) negative self-concept, and (3) disturbances in relationships (Maercker *et al.*, 2013). The proposed factor structure of ICD-11 CPTSD has been supported in recent research (e.g., Shevlin *et al.*, 2017).

Meta-analyses have supported the efficacy of trauma-focused psychological treatments that target patients' memories of their traumatic events and the personal meanings of the trauma, such as individual trauma-focused cognitive behaviour therapy (TF-CBT) and eye movement desensitization and reprocessing (EMDR) therapy for the treatment of DSM-IV PTSD (e.g., Bisson, Roberts, Andrew, Cooper, & Lewis, 2013). However, CPTSD as per ICD-11 proposals also includes disturbances in self-organization, and the evidence regarding the efficacy of existing therapies for these symptoms is rather limited.

Recommendations for more complex presentations of PTSD have typically proposed the incorporation of interventions to directly address the additional symptoms. Empirical investigations have generally demonstrated the feasibility and effectiveness of these approaches. This includes investigations of common co-occurring presentations such as PTSD with substance use disorder (Mills *et al.*, 2012) and PTSD with borderline personality disorder (Harned, Korslund, & Linehan, 2014). Treatment guidelines for CPTSD have specifically recommended a phase-based or sequenced approach in which interventions focused on disturbances in self-organization and related problems in day-to-day functioning (e.g., improving safety, emotion regulation, and social skills) are introduced first while those focused on explicit exploration of the trauma (e.g., exposure) are subsequently introduced (Cloitre *et al.*, 2012). The rationale for this sequence is to prioritize improvement in functioning, which in turn is expected to facilitate effective use of trauma-focused work, and there is some support for this approach (e.g., Cloitre *et al.*, 2010). However, systematic investigation of the effects of ordering treatment components or interventions is lacking.

An important first step that can inform consideration of which problems are most salient and what interventions and sequence of interventions are most relevant is to investigate the associations between psychological factors and CPTSD. Proven and established mechanisms in PTSD such as negative cognitions (Sripada, Rauch, & Liberzon, 2016) are beginning to be explored in CPTSD especially in conjunction with other psychological factors such as attachment style. CPTSD is associated with interpersonal trauma, particularly but not exclusively occurring in early life (Karatzias *et al.*, 2017).

Consequently, there has been significant attention regarding attachment and its relationship with traumatic stress (Murphy, Elklit, Hyland, & Shevlin, 2016). In addition, current conceptualizations suggest that traumatized individuals overutilize relatively ineffective emotion regulation strategies such as expressive suppression and underutilize relatively effective emotion regulation strategies such as cognitive reappraisal (Boden *et al.*, 2013).

In this study, we set out to investigate the predictive utility of negative cognitions, emotional regulation strategies, and attachment style on a diagnosis of ICD-11 CPTSD as compared to ICD-11 PTSD. These factors have never been investigated in association with traumatic stress using a dedicated measure of CPTSD and never in combination. Investigating psychological factors that are associated with the disorder is essential, as this information can potentially inform the adaptation or the development of effective interventions for CPTSD.

Methods

Participants and procedures

A cross-sectional design was employed. Participants ($n = 171$; 51.5% male) were recruited via the National Centre for Mental Health (http://www.ncmh.info/). Participants were recruited via primary and secondary mental health services, specialist veteran's services, a specialist civilian trauma service, and via social media. Participants were eligible for the study if they were aged 18 or older and they reported that they had previously been given a diagnosis of PTSD, or if they indicated exposure to a traumatic event and screened positively for PTSD based on the Trauma Screening Questionnaire (Brewin *et al.*, 2002). Exclusion criteria included inability to read and write in English or disturbed mental state requiring recent admission to hospital or intensive home treatment. All participants reported exposure to a traumatic event fulfilling the gateway criterion for a diagnosis of PTSD and CPTSD under ICD-11. Participants ranged in age from 18 to 78 years ($M = 49.85$, $SD = 12.73$), were primarily Caucasian ($n = 162$, 95.9%), and unemployed ($n = 113$, 66.9%). Half of the cohort were married or cohabiting ($n = 84$, 49.7%), while the remainder were single ($n = 35$, 20.7%), divorced/separated ($n = 43$, 25.5%), or widowed ($n = 7$, 4.1%). A small proportion did not finish school ($n = 12$, 7.1%), whilst many had attended higher education ($n = 80$, 47.6%). This study received ethical approval from the United Kingdom's National Research Ethics Service.

Measures

Traumatic exposure

A modified version of the Life Events Checklist for DSM-5 (LEC-5) (Weathers *et al.*, 2013) was used to assess lifetime exposure to traumatic events (with two additional items that assessed exposure to childhood physical abuse, and childhood sexual abuse or molestation). Individuals were deemed to have been exposed to a trauma if they reported that an event 'Happened to me' or 'Witnessed it happening to somebody else'.

ICD-11 PTSD and CPTSD

The International Trauma Questionnaire (ITQ, version 1.2) (Cloitre, Roberts, Bisson, & Brewin, 2017) is a *preliminary-stage* self-report measure of the ICD-11 diagnoses of PTSD

and CPTSD. Six items measure three PTSD clusters, and sixteen items measure the three DSO factors: All items are answered on a five-point Likert scale anchored by 'Not at all' (0) and 'Extremely' (4). There is evidence that the ITQ has good psychometric properties and can distinguish between PTSD and CPTSD from a number of recent studies (Karatzias *et al.*, 2016).

The Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) contains 33 self-report items, which measure negative beliefs about the self ('Self': 21 items), the world ('World': seven items), and self-blame (five items). Items are scored on a seven-point Likert scale (1 = 'totally disagree', seven = 'totally agree'), and higher scores reflect increasingly negative beliefs. The reliability of the Self (α = .95) and World (α = .90) subscales was good.

The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) is a 10-item measure with two subscales evaluating perceptions of the use of cognitive reappraisal (six items) and expressive suppression (four items) to regulate emotions. These two factors have been shown to operate independently of each other. The ERQ has shown excellent psychometric properties (Ioannidis & Siegling, 2015).

The Experience in Close Relationship Scale-Short Form (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007) is a 12-item measure of attachment. It has been thoroughly evaluated and validated in a series studies and is considered to have equivalent psychometric properties to the ECR (Wei *et al.*, 2007).

Data analysis

Descriptive analyses were performed using the Statistical Package for Social Science (SPSS version 23.0) and logistic regression using Mplus 7.1. Means and standard deviations (*SD*s) were calculated for continuous variables and frequencies (%) for categorical variables. To explore simple group differences on the measures of interest, seven independent-samples *t*-tests were undertaken. A Bonferroni correction was applied to control for the increased risk of a type 1 error associated with multiple testing. An alpha level of .007 (.05/7) was used to determine statistical significance. Additionally, eta-squared values (η^2) were calculated to determine the magnitude of group differences, and based on Cohen's (1988) guidelines, values from .01 to .05 indicate small differences, values from .06 to .13 indicate moderate differences, and values of .14 and greater indicate large differences. Subsequently, a binary logistic regression analysis was conducted to determine the factors, which uniquely predict the presence of a CPTSD diagnosis within a multivariate framework. The dependent variable was the diagnosis of CPTSD, and the reference group was a diagnosis of PTSD (0 = PTSD, 1 = CPTSD). The following nine variables were used as predictors: gender, age, negative cognitions about self, negative cognitions about the world, self-blame, cognitive reappraisal, expressive suppression, attachment anxiety, and attachment avoidance. The model was estimated in Mplus using robust maximum-likelihood estimation.

Results

Demographic characteristics of the sample are presented in Table 1.

The mean number of types of traumatic life events experienced was 6.75 (*Mdn* = 6.00, *SD* = 3.84), and the most frequently experienced trauma was physical assault (*n* = 121, 73.7%). The experience of physical and/or sexual abuse during

Table 1. Comparison of groups on demographic variables (*N* = 171)

Variable	PTSD (*N* = 86)	CPTSD (*N* = 85)
Age mean (*SD*)	49.58 (12.9)	50.12 (12.5)
Gender (%)		
Male	52.3	50.6
Female	47.7	49.4
Ethnicity (%)		
White	94.2	97.6
Mixed	2.3	2.4
Asian	2.3	
Others	1.2	
Employment (%)		
Unemployed	55.8	78.3
Employed	44.2	21.7
Living arrangements (%)		
Married	43.0	30.1
Cohabiting	14.0	12.0
Single	19.8	21.7
Widowed	2.3	6.0
Divorced	16.3	27.7
Separated	4.7	2.4
Schooling (%)		
No qualifications	3.5	10.8
GCSEs or equivalent	21.2	27.7
A levels or equivalent	12.9	9.6
College certificate or diploma	23.5	22.9
Degree	20.0	13.3
Higher University degree	10.6	4.8
Other	8.2	10.8

childhood was common (*n* = 79, 47.6%). The most distressing traumatic events identified were childhood sexual abuse or molestation (*n* = 26, 15.5%), and combat (*n* = 22, 13.1%).

Independent-samples *t*-test results suggest that individuals with a CPTSD diagnosis scored significantly higher than individuals with PTSD for all PTCI subscales: *Negative cognitions about self*, $t(146) = 9.25$, $p < .001$, $\eta^2 = .34$, *Negative cognitions about the world*, $t(137) = 6.70$, $p < .001$, $\eta^2 = .21$, and *Self-Blame*, $t(166) = 3.23$, $p = .001$, $\eta^2 = .05$. Furthermore, individuals with CPTSD scored significantly higher on both Experiences in Close Relationships subscales; *Attachment anxiety*, $t(169) = 4.21$, $p < .001$, $\eta^2 = .09$; and *Attachment avoidance*, $t(169) = 3.95$, $p < .001$, $\eta^2 = .08$. Additionally, there was a difference between the groups in the use of emotion regulation strategies. Individuals with CPTSD scored significantly higher on the use of ERQ expressive suppression strategies, $t(169) = 4.30$, $p = 001$, $\eta^2 = .09$, and significantly lower on the ERQ *cognitive reappraisal* strategies, $t(169) = 3.30$, $p = .001$, $\eta^2 = .06$. Overall, results indicate that those with CPTSD present with more negative cognitions, attachment difficulties, increased use of expressive suppression emotion regulation strategies, and decreased use of cognitive reappraisal emotion regulation strategies (see Table 2).

Binary logistic regression analysis was performed to assess the unique predictive utility of post-traumatic negative cognitions, emotion regulation strategies, and attachment

difficulties along with gender and age on the likelihood of presenting with a diagnosis of CPTSD as compared to PTSD. A test of the full model containing all predictor variables against a constant-only model was statistically significant, χ^2 (9, 171) = 86.43, $p < .001$. This indicates that the model was able to distinguish between individuals who reported experiencing symptoms of CPTSD and those that reported experiencing symptoms of PTSD. As shown in Table 3 the results suggest that negative cognitions about self (OR = 2.43, $p < .001$), attachment anxiety (OR = 1.45, $p < .05$), and the use of expressive suppression emotion regulation strategies (OR = 1.38, $p < .05$) were all significantly related to a diagnosis of CPTSD.

Discussion

In this study, we set out to investigate the association between negative trauma-related cognitions, emotional regulation strategies, and attachment style and a CPTSD diagnosis. The most important correlate of CPTSD was negative cognitions about the self, characterized by a generalized negative view about the self and one's trauma symptoms; followed by attachment anxiety which is defined as involving a fear of interpersonal rejection or abandonment and/or distress if one's partner is unresponsive or unavailable; and expressive suppression, conveyed by efforts to hide, inhibit, or reduce emotional expression.

In line with existing evidence on the treatment of PTSD (e.g., Bisson *et al.*, 2013), our results would appear to support the usefulness of cognitive-behavioural interventions that promote the association between thoughts, feelings, and behaviours and enable people with CPTSD to modulate feelings by modifying thoughts and behaviours. However, it is unclear whether the cognitions of individuals with CPTSD are as amenable to such interventions as those without the condition. Negative self-concept is a central aspect of the CPTSD formulation and defined in terms of persistent beliefs about one's self as

Table 2. Group differences between individuals with symptoms of PTSD and CPTSD

Variables	Group	N	M	SD	t	η^2
Post-Traumatic Cognitions Scale (PTCI)						
Negative cognitions about self	PTSD	86	3.75	1.27	−9.25*	.34
	CPTSD	85	5.32	0.88		
Negative cognitions about the world	PTSD	86	4.87	1.34	−6.70*	.21
	CPTSD	85	6.04	0.84		
Self-Blame	PTSD	86	3.08	1.50	−3.23*	.05
	CPTSD	85	3.87	1.67		
Emotion Regulation Questionnaire (ERQ)						
Cognitive reappraisal	PTSD	86	4.34	1.20	3.30*	.06
	CPTSD	85	3.71	1.29		
Expressive suppression	PTSD	86	4.00	1.31	−4.30*	.09
	CPTSD	85	4.90	1.43		
Experiences in Close Relationships Scale – Short Form (ECR-S)						
Attachment anxiety	PTSD	86	3.84	1.28	−4.21*	.09
	CPTSD	85	4.67	1.29		
Attachment avoidance	PTSD	86	4.13	0.94	−3.95*	.08
	CPTSD	85	4.76	1.12		

Note. Statistical significance: *$p < .001$; **$p < .005$; *** $p < .05$.

Table 3. Binary logistic regression estimates predicting likelihood of reporting symptoms of Complex PTSD

Predictors	Sig.	Odds ratios	(95.0% CI)
Gender	0.88	1.06	(0.45, 2.48)
Age	0.60	1.01	(0.97, 1.04)
PTCI negative cognitions about self	0.00	2.43	(1.33, 4.46)
PTCI negative cognitions about the world	0.09	1.51	(0.93, 2.45)
PTCI self-blame	0.85	1.02	(0.78, 1.34)
ERQ cognitive reappraisal	0.58	0.89	(0.60, 1.32)
ERQ expressive suppression	0.04	1.38	(1.03, 1.86)
ECR-S attachment anxiety	0.02	1.45	(1.02, 2.06)
ECR-S attachment avoidance	0.38	1.22	(0.79, 1.92)

diminished, defeated, or worthless, accompanied by deep and pervasive feelings of shame, guilt, or failure (Maercker *et al.*, 2013). Beliefs and schemas of this kind can make individuals very resistant to traditional cognitive-behavioural interventions, and it has been argued that such patterns of thinking may be more responsive to compassion-focused interventions (Gilbert & Irons, 2014).

Consistent with the findings of the present study, cognitive-behavioural approaches also emphasize the role of skills training to address emotional regulation to enable successful processing of traumatic memories (Jackson, Nissenson, & Cloitre, 2009). Our results also suggest that attachment disorganization is a contributing factor to a CPTSD diagnosis and call for existing and new therapies to incorporate developmentally informed strategies to reset attachment representations (Liotti, 2004). These may include interventions that foster the development of stable, positive attachment representations, increase organization of coherence of mind, transform maladaptive interpersonal schemas through limited reparenting, enable the development of capacity to mentalize, and reflect on mental states that promote increased control over internal experiences (e.g., Giesen-Bloo *et al.*, 2006).

A number of limitations can be observed in the present study. Although the sample was typical of secondary- and tertiary-care clinical groups, the small sample size, the clinical nature of the sample, and the cross-sectional nature of this research limit generalizability to the wider trauma population. Furthermore, some conceptual overlap between the scales can be observed. Negative beliefs and emotion dysregulation are also components of ICD-11 CPTSD, whereas attachment insecurity can be implicit in interpersonal dysregulation of CPTSD (Ford, 2017). In addition, the measures of cognitions, emotion regulation, and attachment employed in the present study are brief and do not necessarily capture the full spectrum of related difficulties (e.g., rejection or closeness, Van Dijke *et al.*, 2015). With regard to further research in the area, there is a need to explore the role of trauma processing through exposure strategies. Although there is evidence that exposure interventions can be beneficial for people with CPTSD (e.g., childhood psychological trauma; Cloitre *et al.*, 2010), there is also evidence to suggest that exposure interventions can exacerbate traumatic stress symptoms for some patients (Foa, Zoellner, Feeny, Hembree, & Alvarez-Conrad, 2002). There is clearly a need for further research to explore the intensity, to whom, and when exposure should be offered. There is also a need to understand the usefulness of attachment-focused therapies, relational models as well as person-centred therapy in people with CPTSD. Furthermore, there is some evidence that phased approaches to treatment improve retention and dropout rates (e.g.,

Cloitre *et al.*, 2010), although some in the field have argued that such evidence is weak (De Jongh *et al.*, 2016). Further research is required to establish the usefulness of phased approaches as well as the usefulness of patient-centred approaches to CPTSD as there is emerging evidence that such approaches are associated with better outcomes, less dropout, and decreased health care utilization (Bertakis & Azari, 2011).

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