






RESEARCH ARTICLE

Early maladaptive schemas and ICD-11 CPTSD symptoms: Treatment considerations

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Abstract

Objectives: Early maladaptive schemas (EMS) can result from adverse interpersonal traumatic experiences. The ICD-11 updated the concept of disorders following traumatic experiences with the new disorder of complex post-traumatic stress disorder (CPTSD). There is now a need to develop and test interventions for CPTSD. An essential step in identifying interventions that are particularly relevant to the treatment of CPTSD is to explore psychological constructs associated more closely with CPTSD compared to PTSD. The current study explored the associations of EMS with PTSD and CPTSD.

Design: The sample consisted of 603 adults (mean age = 41.65, $SD = 13.8$), recruited through social media and e-mails, and who responded to an online questionnaire.

Methods: Participants completed measures of demographic, traumatic life events, EMS, PTSD and CPTSD symptoms.

Results: Overall, results suggest that participants with CPTSD present with higher schema elevations across all schemas compared to those with PTSD or no diagnosis. Secondly, the schemas of emotional deprivation, abandonment/instability, social isolation/alienation, defectiveness/shame, enmeshment/undeveloped self, subjugation, emotional inhibition and insufficient self-control/self-discipline were significantly associated with the symptom clusters of CPTSD. Finally, results indicate that different schemas form significant associations with the individual symptom clusters of CPTSD.

Conclusions: Although results require replication in clinical samples, initial findings suggest that specific EMS may be important psychological correlates of CPTSD symptoms.

Wider treatment considerations of these findings are discussed.

KEYWORDS

complex post-traumatic stress disorder, early maladaptive schemas, post-traumatic stress disorder

Practitioner Points

- Individuals with probable complex post-traumatic stress disorder (CPTSD) present with elevated scores across all schemas compared to those with post-traumatic stress disorder or no diagnosis.
- Findings demonstrate significant associations between early maladaptive schemas (EMS) and the symptom clusters specific to CPTSD, especially the schemas of emotional deprivation, abandonment/instability, social isolation/alienation, defectiveness/shame, enmeshment/undeveloped self, subjugation, emotional inhibition, and insufficient self-control/self-discipline.
- The study underscores that EMS appear to be significant correlates of CPTSD symptoms highlighting the potential usefulness of cognitive behavioral therapies for this debilitating condition.

INTRODUCTION

Interpersonal trauma broadly defines trauma(s) deliberately caused by a person or persons against another person, such as physical neglect and abuse, emotional neglect and abuse, sexual abuse and domestic abuse (Mauritz et al., 2013). Early maladaptive schemas (EMS) may develop as a result of interpersonal traumatic experiences (Young et al., 2003), and interpersonal trauma is strongly associated with complex post-traumatic stress disorder (CPTSD; Karatzias et al., 2017). CPTSD includes the three post-traumatic stress disorder symptom (PTSD) clusters of (1) re-experiencing of the trauma here and now, (2) avoidance of traumatic reminders and (3) a persistent sense of current threat, and three additional clusters that reflect 'disturbances in self-organization' (DSO). These are (1) affective dysregulation, (2) negative self-concept and (3) disturbances in relationships (World Health Organization, 2018). Nevertheless, CPTSD is most likely associated with prolonged, repeated, interpersonal and unavoidable trauma exposure (Karatzias et al., 2017). Moreover, evidence suggests that individuals diagnosed with probable CPTSD show increased functional impairment and feelings of social isolation and loneliness (Murphy et al., 2021). Therefore, CPTSD although a debilitating disorder, there is limited evidence on the effectiveness of interventions to aid recovery.

There is evidence suggesting that existing therapies for PTSD might be less effective for people with CPTSD (Karatzias et al., 2019). An essential step in identifying interventions that are particularly relevant to the treatment of CPTSD is to identify psychological constructs that are more strongly associated with CPTSD than PTSD. Such information can inform existing therapies and perhaps the development of new therapies for CPTSD. The association between EMS and PTSD has been examined in adult populations (Karatzias et al., 2016), while only one study examined the association between CPTSD and EMS in a clinical sample of older adults (Vasilopoulou et al., 2020). In their study, Vasilopoulou et al. (2020) found that EMS mediated the association between childhood trauma and CPTSD symptom severity in the older population. However, no studies have examined these associations in the general adult population. The current study, therefore, aimed to examine the different associations between EMS and PTSD and CPTSD in a general population sample of adults.

Early maladaptive schemas (EMS)

A schema is a comparatively constant body of information which interacts with incoming information to form careful observations, expectations, interpretations and memory searches (Williams et al., 1997, p. 211). Although schemas have been defined in different ways, most definitions incorporate both structural properties and propositional elements (Ingram et al., 1994). Schmidt and Hitchon (1999), for example referred to schemas as essential structural components of a cognitive organization through which people identify, interpret, categorize and evaluate their experiences. This organized structure is often adaptive and expedites the rate at which people process information, needing less controlled cognitive resources. Schemas originate in early childhood or adolescence and become increasingly stable over time unless significant corrective experiences occur. Additionally, cultural and temperament aspects can contribute to schema activation (Young et al., 2003).

Young (1990) further developed this concept with the suggestion that schemas, or early maladaptive schemas (EMS), develop when core emotional needs are not met in childhood. Young and colleagues (Young et al., 2003) defined EMS as 'a broad, pervasive theme or pattern, comprised of memories, emotions, cognitions, and bodily sensations, regarding oneself and one's relationships with others, developed during childhood or adolescence, elaborated throughout one's lifetime and dysfunctional to a significant degree' (Young et al., 2003, p. 7). EMS enable the child comprehension and management of his environment and continue to influence the child's response to external events (Young, 1990). According to Young et al. (2003), the child's temperament plays a significant part in the development of schemas. The interchange between the child's biological temperament and an early unhealthy environment, including parental neglect and abuse, hinders the fulfilment of the child's basic needs, resulting in vulnerability and emotional neediness in adult life (Young et al., 2003). Despite the assumption that EMS originate in early childhood, Young's model underscores that these schemas develop throughout the lifespan by engaging in new experiences (Young et al., 2003). In adulthood, EMS prevails its limited utility and generates distress when activated by situations compatible with the original traumatic event (Young, 1990).

EMS and PTSD

In schema therapy, EMS are proposed as the core and main target for treatment of personality disorders and longstanding characterological problems (Young et al., 2003). To explain these patterns, Young and his colleagues (Young & Brown, 1994; Young et al., 2003) developed a theoretical model linking specific early traumatic experiences to the development of specific EMS, using the Young Schema Questionnaire (YSQ; Young & Brown, 1994). Using this tool, they suggested that sexual and physical abuse during childhood may lead to the development of EMS with themes of danger or mistrust. Also, they showed that parental neglect may contribute to the development of schemas connected to loss and worthlessness. Furthermore, and of importance to the present study, EMS were found to be associated with PTSD, with higher EMS reported among people diagnosed with PTSD than among comparisons in the general population (Ahmadian et al., 2015; Boudoukha et al., 2016; Cockram et al., 2010). An association has also been found between EMS and PTSD among survivors of childhood sexual abuse (Harding et al., 2012; Karatzias et al., 2016). Previous studies have reported a stronger association between schemas of social isolation, emotional deprivation, emotional inhibition, mistrust/abuse and defectiveness schemas (disconnection domains) and subjugation, dependence, failure, vulnerability, abandonment, enmeshment and insufficient self-control (impaired autonomy domains) with PTSD (Harding et al., 2012; Karatzias et al., 2016; Price, 2007; Rezaei et al., 2016; Vasilopoulou et al., 2020). It has been suggested that these schemas appear to be exceptionally responsive to trauma and abuse, therefore, form stronger associations with PTSD (Harding et al., 2012; Lumley & Harkness, 2007; Young et al., 2003).

Current aims and hypotheses

The goal of this study was to examine the association between different EMS and CPTSD. Based on previous research in the field (Harding et al., 2012; Karatzias et al., 2016), it was hypothesized that those with CPTSD will have significantly higher levels of EMS compared to those with PTSD. Furthermore, we sought to explore if different EMS were specifically associated with symptom clusters of CPTSD.

METHOD

Procedure and participants

Ethical approval for the study was received from the Ethics Committee at Ariel University. All participants signed an electronic informed consent form before completing the questionnaire.

The survey was hosted on a free online platform between 21st November 2019 and 12th December 2019. The platform allows hosting and data collection of surveys. Upon generating a link, two of the authors (M.Y. and A.S.) circulated the link using social media such as Facebook, WhatsApp and asking the participants to circulate the link further to family members and friends. We used snowball sampling and beyond that the study was not advertised further. The authors (M.B., M.Y. and A.S.) e-mails were available to the participants if they wished to contact the team and an option to call ERAN in Hebrew synonym for (First Aid Mental Health) hotline was presented to the participants in the case of emotional distress. Participants included 603 adults between the ages of 18–91, with a mean age of 41.65 years ($SD = 13.83$). The majority of the participants were female ($n = 414$, 69%) and reported being in a committed relationship ($n = 483$, 80%).

Measures

Background characteristics were completed by all respondents and included age, gender and marital status.

Traumatic life events were assessed by the Life Events Checklist (LEC; Gray et al., 2004) revised version (LEC-R). The LEC-R is a 19-item scale assessing exposure to 19 traumatic events (e.g. natural disaster, physical assault, life-threatening illness/injury) including two items that specifically inquire about childhood trauma (i.e. childhood sexual abuse, childhood physical abuse). The 19th item can be used to indicate exposure to a trauma that is not listed (i.e. any other very stressful event/experience). For each item, participants were asked whether the event (1) *happened to me*, (2) *witnessed it happening to somebody else*, (3) *learned about it happening to someone close to me*, (4) *part of my job*, (5) *not sure it applies*, (6) *does not apply to my experience*. Each item was recorded as (1) *happened to me* and (0) *all other responses*, except for the items relating to *sudden violent death* and *sudden accidental death*, which were coded (1) *witnessed it happening to somebody else* and (0) *all other responses*. A summed total of all binary responses was calculated to represent the number of different life events experienced, which produced a single 'total traumas' variable with possible scores ranging from 0 to 19.

Early maladaptive schemas were measured by The Young Schema Questionnaire—Short Form (YSC-SF; Young & Brown, 1998). The YSC-SF is a 75-item measure assessing 15 EMS (5 items each) including (a) abandonment/instability (questions 1–5); (b) mistrust/abuse (questions 6–10); (c) emotional deprivation (questions 11–15); (d) defectiveness/shame (questions 16–20); (e) social isolation/alienation (questions 21–25); (f) dependence/incompetence (questions 26–30); (g) vulnerability to harm or illness (questions 31–35); (h) enmeshment/undeveloped self (questions 36–40); (i) failure (questions 41–45); (j) entitlement/grandiosity (questions 46–50); (k) insufficient self-control/self-discipline (questions 51–55); (l) subjugation (questions 56–60); (m) self-sacrifice (questions 61–65); (n) emotional inhibition (questions 66–70); (o) unrelenting standards/hypocriticalness (questions 71–75). Participants rated individual questions on a Likert scale ranging from 1 (*completely false about me*) to 6 (*describes me perfectly*). High scores on a specific

subscale index denotes stronger manifestations of the assessed EMS (Gullhaugen & Nøttestad, 2012). In this study, the internal reliability of the total scale score was excellent ($\alpha = .95$).

PTSD and complex PTSD were assessed by the International Trauma-Questionnaire (ITQ; Cloitre et al., 2018). The ITQ assesses six symptoms of PTSD across the three clusters of re-experiencing, avoidance and sense of threat, and six symptoms of DSO across the three clusters of affective dysregulation, negative self-concept and disturbed relationships in relation to a specified traumatic event. For PTSD, participants were asked to rate how much they had been bothered by their symptoms in the last month. The diagnostic criteria for PTSD require endorsement of at least one symptom in each cluster, and evidence of functional impairment associated with these symptoms, as constituted by a score of 2 or more in the domain(s) of social life, work life and/or other important obligations. For the DSO symptoms, participants were instructed to report how they typically feel, think about themselves and relate to others. For a diagnosis of CPTSD, participants must meet criteria for PTSD in addition to displaying one symptom in each DSO cluster and evidence of functional impairment in relation to the PTSD and DSO symptoms alike. Participants were asked to rate each ITQ item on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Summed scores for PTSD and DSO were also calculated, with each having a possible range of scores from 0 to 24. The ITQ has been validated in several general and clinical populations (Redican et al., 2021). Cronbach's alpha coefficient in the present study was $\alpha = .85$ for PTSD, $\alpha = .88$ for CPTSD and $\alpha = .89$ for the full scale.

Data analysis

Analyses were conducted using the IBM SPSS statistic package (SPSS 26). First, differences in demographics and EMS across the three diagnostic groups (CPTSD, PTSD, no diagnosis) were assessed using one-way ANOVAs with Scheffe post-hoc tests for continuous variables and chi-square tests for categorical variables. The Bonferroni correction for multiple one-way ANOVAs and regression analyses ($0.05/20 = .0025$) was applied. Results of $p > .0025$ were considered non-significant. Second, bivariate correlations between the demographic variables and EMS subscales and PTSD and DSO scores were calculated. EMS's that formed significant associations with PTSD and DSO were modelled in a multivariate multiple regression model, specified as a path analysis model. This model had two outcome variables, the summed scores on the PTSD and DSO scales from the ITQ. Associations between the predictor variable (cumulative trauma) and the summed scores on each of the 15 EMS subscales of the YSC-SF were investigated using regression analysis. The model parameters were estimated using robust maximum likelihood (MLR: Yuan & Bentler, 2000), performed with Mplus software (Muthén & Muthén, 2017). The MLR estimator is robust to non-normally distributed data and can produce corrected standard errors under conditions of non-normality (Enders & Bandalos, 2001). The results are reported as standardized regression coefficients. Third, we examined the associations between early maladaptive schemas and ICD-11 PTSD and CPTSD clusters and probable diagnosis using a set of logistic regressions. The independent variables were demographics (age, sex, relationship status and cumulative trauma) and the 15 EMS. The dependent variables represented whether the diagnostic criteria for each PTSD (re-experiencing, avoidance and sense of threat) and DSO (affective dysregulation, negative self-concept and disturbances in relationships) cluster were met. The associations were reported as odds ratios.

RESULTS

In the present study, 544 participants (90.4%) did not reach the diagnostic level for the stress-based disorder. Forty participants (6.6%) had probable PTSD. Eighteen participants (3.0%) had probable CPTSD. The mean number of traumatic events reported by the participants in this study was 3.73 ($SD = 3.31$). The results revealed no differences in basic demographics across those meeting probable diagnostic criteria for PTSD, CPTSD and the no-diagnosis group. However, diagnostic groups differed significantly in

the number of traumas with the lowest number among those with no probable diagnosis and the highest number among those with CPTSD. A post-hoc analysis showed significant differences between all groups. As shown in Table 1, in comparison with those with no diagnosis or PTSD, those with CPTSD had statistically significantly higher scores across all schemas, with the exception of self-sacrifice schema.

Table 2 presents associations between PTSD and DSO symptom scores with individual schemas in those with a diagnosis of PTSD and CPTSD. PTSD was found to be significantly associated with the schema of mistrust/abuse, whereas DSO was found to be associated with the schemas of abandonment/instability, social isolation/alienation, subjugation and emotional inhibition.

Table 3 presents multiple regression analyses with PTSD and DSO symptoms as the criterion variables and individual schemas as the predictor variables. It was found that no individual schema predicted PTSD symptoms. However, the schemas of emotional deprivation, abandonment/instability, social isolation/alienation, defectiveness/shame, enmeshment/undeveloped self, subjugation, emotional inhibition

TABLE 1 Descriptive statistics and multivariate comparison of the study variables ($n = 602$)

	No diagnosis ($N = 544$), mean (SD)/ n (%)	PTSD ($N = 40$), mean (SD)/ n (%)	Complex PTSD ($N = 18$), mean (SD)/ n (%)	F (2, 601)	Statistics/Scheffe
Demographics					
Age (years)	41.76 (13.7)	38.9 (13.96)	44.11 (17.57)	1.11	
Sex (female)	372 (68.4%)	28 (70.0%)	14 (77.8%)		$\chi^2 = 0.770$
In a committed relationship	439 (80.7%)	30 (75.0%)	14 (77.8%)		$\chi^2 = 0.783$
Cumulative trauma	3.45 (3.07)	5.25 (3.48)	7.66 (5.91)	19.42***	1 < 2, 1 < 3, 3 > 2
Early maladaptive schema					
Emotional deprivation	9.44 (4.93)	10.97 (5.71)	17.33 (6.93)	22.41***	1 < 3, 2 < 3
Abandonment/instability	8.9 (4.8)	10.2 (5.4)	16.94 (6.12)	24.45***	1 < 3, 2 < 3
Mistrust/abuse	8.91 (4.26)	11.8 (5.91)	16.05 (4.54)	26.96***	1 < 3, 1 < 2, 2 < 3
Social isolation/alienation	8.31 (4.7)	9.54 (6.34)	15.94 (5.52)	22.45***	1 < 3, 2 < 3
Defectiveness/shame	6.60 (3.31)	7.74 (3.83)	14.4 (6.12)	45.67***	1 < 3, 1 < 2, 2 < 3
Failure	7.96 (3.5)	9.2 (4.2)	13.55 (6.6)	22.10***	1 < 3, 2 < 3
Dependence/incompetence	7.4 (3.31)	7.25 (3.02)	13.17 (6.54)	24.75***	1 < 3, 2 < 3
Vulnerability to harm or illness	8.54 (4.4)	9.46 (4.6)	14.8 (5.75)	17.61***	1 < 3, 2 < 3
Enmeshment/undeveloped self	7.07 (3.62)	7.56 (3.96)	14.2 (6.8)	30.94***	1 < 3, 2 < 3
Subjugation	8.13 (3.9)	9.61 (4.9)	15.9 (5.54)	34.03***	1 < 3, 2 < 3
Self-sacrifice	14.8 (5.9)	17.7 (5.3)	16.05 (5.11)	4.81	1 < 2
Emotional inhibition	8.88 (4.65)	9.9 (6.07)	15.05 (4.93)	15.20**	1 < 3, 2 < 3
Unrelenting standards/ hypercriticalness	16.5 (6.7)	18.43 (6.63)	18.7 (5.11)	2.40	
Entitlement/grandiosity	11.44 (4.8)	11.2 (4.25)	15.28 (3.7)	5.90	1 < 3, 2 < 3
Insufficient self-control/ self-discipline	10.20 (4.95)	11.61 (5.6)	13.8 (4.41)	5.74	1 < 3
YSQ total score (Early Maladaptive Schema)	142.79 (43.93)	161.56 (44.29)	231.06 (53.47)	37.03***	1 < 3, 1 < 2, 2 < 3

Note: Results in bold are significant after applying Bonferroni adjustments. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; EMS are measured using the Young Schema Questionnaire.

and insufficient self-control/self-discipline significantly predicted DSO symptoms. These results suggest that schemas are more relevant to the DSO cluster of CPTSD, especially these four schemas.

DISCUSSION

In the current study, we aimed to explore the associations between EMS, PTSD and CPTSD. In contrast to previous studies that were based on the DSM definition of PTSD (Boudoukha et al., 2016; Cockram et al., 2010; Edworthy et al., 2008), the present study was contrived on the ICD 11 definitions of PTSD and CPTSD. Exploring the role of psychological constructs such as schemas on CPTSD can provide useful information because it can inform potential interventions for this debilitating condition. This is significant considering emerging evidence of the potential limited role of interventions routinely used for PTSD to those with CPTSD (Karatzias et al., 2019). Therefore, it is vital to identify psychological constructs that are exclusively associated with CPTSD.

Results suggest that those with CPTSD present with elevated scores across all schemas compared to those with PTSD or no diagnosis. Of importance to the current study, findings show that no individual schema predicted PTSD symptoms. In contrast, schemas of emotional deprivation, abandonment/instability, social isolation/alienation, defectiveness/shame, enmeshment/undeveloped self, subjugation,

TABLE 2 Correlations between demographics and EMS and PTSD and DSO scores

	PTSD		DSO	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Demographics				
Sex (female)	.055	.156	.024	.502
Age (years)	.013	.754	.021	.580
In a committed relationship	-.041	.313	-.038	.337
Cumulative trauma	.179	.000	.006	.885
Early maladaptive schema				
Emotional deprivation	.073	.174	.083	.075
Abandonment/instability	-.078	.243	.227***	.001
Mistrust/abuse	.236***	.001	-.085	.205
Social isolation/alienation	-.036	.654	.325***	<.001
Defectiveness/shame	.100	.285	.129	.125
Failure	.076	.192	-.004	.938
Dependence/incompetence	-.026	.711	-.023	.729
Vulnerability to harm or illness	.144	.038	-.053	.398
Enmeshment/undeveloped self	.059	.463	.098	.163
Subjugation	-.079	.427	.257**	.004
Self-sacrifice	.068	.178	-.080	.078
Emotional inhibition	-.052	.340	.164**	.003
Unrelenting standards/hypercriticalness	.030	.607	.070	.187
Entitlement/grandiosity	.061	.302	.038	.486
Insufficient self-control/self-discipline	.103	.076	.061	.180

Note. Results in bold are significant after applying Bonferroni adjustments. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

TABLE 3 Standardized regression coefficients from multivariate regression model with demographics and EMS predicting PTSD and DSO scores

Predictors	PTSD		DSO	
	β (SE)	<i>p</i>	β (SE)	<i>p</i>
Demographics				
Sex (female)	.067 (.03)	.058	.022 (.03)	.424
Age (years)	.013 (.04)	.741	.016 (.03)	.605
In a committed relationship	-.045 (.04)	.236	-.033 (.03)	.299
Cumulative trauma	.165 (.04)	<.001***	.015 (.03)	.607
Early maladaptive schema				
Emotional deprivation	.056 (.05)	.232	.077 (.03)	.026*
Abandonment/instability	.010 (.05)	.855	.128 (.04)	.009**
Mistrust/abuse	.103 (.05)	.060	.000 (.04)	.997
Social isolation/alienation	.071 (.06)	.242	.229 (.04)	.001***
Defectiveness/shame	.089 (.07)	.208	.133 (.05)	.015*
Failure	.046 (.04)	.309	.015 (.03)	.688
Dependence/incompetence	-.077 (.05)	.153	-.028 (.04)	.538
Vulnerability to harm or illness	.082 (.06)	.168	-.019 (.04)	.669
Enmeshment/undeveloped self	.051 (.06)	.389	.089 (.04)	.048*
Subjugation	.028 (.06)	.666	.149 (.05)	.004**
Self-sacrifice	.019 (.04)	.684	-.049 (.03)	.154
Emotional inhibition	-.035 (.05)	.471	.111 (.04)	.007**
Unrelenting standards/hypercriticalness	.055 (.05)	.280	.054 (.03)	.165
Entitlement/grandiosity	.053 (.05)	.271	.032 (.03)	.415
Insufficient self-control/self-discipline	.089 (.05)	.068	.067 (.03)	.050*
R-square	.278 (.04)	<.001	.559 (.04)	<.001

Note: Results in bold are significant after applying Bonferroni adjustments. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

emotional inhibition and insufficient self-control/self-discipline significantly predicted DSO symptoms of CPTSD. The association between the schemas associated with EMS and DSO demonstrates escalating functional impairment and feelings of social isolation and loneliness (Murphy et al., 2021). This may be a result of EMS developing when fundamental emotional needs are not met at a young age, introducing themes of negative self-perception and relationships with others (Young, 1990). Moreover, the current findings underscore the suggestion that parental neglect may contribute to the development of schemas linked to loss and worthlessness (Young & Brown, 1994). Previous studies have suggested that schemas responsive to trauma and abuse tend to produce a stronger link with PTSD (Harding et al., 2012; Lumley & Harkness, 2007; Young et al., 2003). Specifically, schemas of social isolation, emotional deprivation, emotional inhibition, mistrust/abuse, and defectiveness schemas (disconnection domains) and subjugation, dependence, failure, vulnerability, abandonment, enmeshment and insufficient self-control (impaired autonomy domains) were previously strongly linked with PTSD (Harding et al., 2012; Karatzias et al., 2016; Price, 2007; Rezaei et al., 2016; Vasilopoulou et al., 2020). Findings of a link between EMS and PTSD were underscored in studies of adult survivors of interpersonal trauma (Dutra et al., 2008) and among survivors of childhood sexual abuse (Harding et al., 2012; Karatzias et al., 2016). The current study, therefore, highlights that many schemas previously associated with PTSD, are in reality, associated with CPTSD.

In relation to basic demographics, results revealed no differences between those with probable diagnostic criteria for PTSD, CPTSD and the no-diagnosis group. The current findings support previ-

ous results showing no significant differences between those diagnosed with PTSD compared to those with CPTSD in terms of gender and age (Karatzias et al., 2017). In contrast to findings of Karatzias et al. (2017), which showed a link between CPTSD and relationship status, no differences were found in the present study between relationship status and CPTSD. Moreover, in the present study, diagnostic groups differed significantly in relation to number of traumas, with the lowest number present among those with no probable diagnosis and the highest number among those with CPTSD. This finding supports previous studies showing that while PTSD may be triggered by a single event, CPTSD commonly results from exposure to cumulative trauma (Cloitre et al., 2013; Hyland et al., 2017; Karatzias et al., 2017).

Another important finding of this study is that different schemas form significant associations with the individual clusters of CPTSD. There has been limited research on the role of cognitive factors on CPTSD symptom clusters, but emerging evidence from a theoretical perspective supports the usefulness of cognitive behavioural interventions for the treatment of CPTSD (Karatzias, Hyland, et al. 2018; Karatzias, Shevlin, et al. 2018). Specifically, to date, there has been only one study on the association between cognitive schemas and CPTSD by Vasilopoulou et al. (2020), where it was found that EMS total score mediated the relationship between childhood trauma and CPTSD symptom severity. The present results extend the findings of this work further and are consistent with cognitive models of traumatic stress, which highlight the role of cognitive factors in the development and maintenance of traumatic stress (Ehlers & Clark, 2000; Foa et al., 1999). The current findings also provide empirical support for the usefulness of cognitive behavioural interventions such as the Schema Therapy model (Young et al., 2003) for the treatment of CPTSD and in particular in relation to the symptoms of DSO.

Findings suggest that targeting unhelpful appraisals among those with CPTSD, such as *others are unreliable or unavailable for support, one is isolated or different from the rest of the world, one should deliberately suppress their needs, emotions or actions as these are less important compared with those of others, and avoiding disapproval or shame*, may aid recovery from the DSO symptoms of CPTSD. The current findings broaden the results of the only other study that examined the link between EMS and CPTSD, which focused on older adults (Vasilopoulou et al., 2020) and suggests that interventions targeting EMS, specifically in the domains of Disconnection and Impaired Autonomy, may be beneficial for alleviating CPTSD symptoms in the ageing population. There is now an urgent need for further experimental psychopathological work to explore the impact of addressing such beliefs for the treatment of DSO clusters and CPTSD more widely.

Overall, results highlight the importance of challenging unhelpful appraisals to promote a positive sense of self and healthier relationships with others for the treatment of CPTSD (Cloitre et al., 2011; Karatzias & Cloitre, 2019; Maercker et al., 2013). Schema therapy (Young, 1990), which integrates interpersonal and experiential strategies, can be a useful therapy for people with CPTSD. While it has been noted that targeting maladaptive cognitive schemas may enable those with CPTSD to construct more adaptive themes and appraisals about themselves and their interpersonal relationships (Kellogg & Young, 2006), findings of the current study suggest that schema therapy may potentially improve DSO clusters as well as PTSD symptoms. Nevertheless, given that DSO symptom clusters are new to ICD-11, it is suggested that this area should be explored in future research.

These findings should be considered in light of the study's limitations. First, the study is cross-sectional and therefore does not examine how schemas develop over time and at different developmental periods. Therefore, longitudinal research is needed to explore how schemas develop over time and after exposure to different traumatic life events. Second, participants were chosen from the general population rather than a clinical sample. Again, further research is required on the association between EMS and ICD-11 PTSD and CPTSD in clinical samples. Finally, considering that the sample was drawn from social media it raises some concerns regarding its representativeness.

Despite these limitations, the present study provides some evidence with regard to the associations between EMS, PTSD and CPTSD. Although further research is required to confirm these associations, our results suggest an association between EMS and CPTD. Future research should explore the effectiveness of targeting EMS and other cognitive factors for the treatment of CPTSD.

AUTHOR CONTRIBUTIONS

Lee Greenblatt-Kimron: Conceptualization; data curation; visualization; writing – original draft; writing – review and editing. **Thanos Karatzias:** Conceptualization; data curation; formal analysis; methodology; writing – review and editing. **Maya Yonatan:** Conceptualization; data curation; investigation; writing – original draft. **Adi Shoham:** Conceptualization; data curation; investigation; writing – original draft. **Philip Hyland:** Conceptualization; data curation; formal analysis; methodology; writing – review and editing. **Menachem Ben-Ezra:** Conceptualization; data curation; formal analysis; methodology; project administration; supervision; writing – review and editing. **Mark Shevlin:** Conceptualization; data curation; formal analysis; methodology; writing – review and editing.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

No data is available for this article.

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How to cite this article: Greenblatt-Kimron, L., Karatzias, T., Yonatan, M., Shoham, A., Hyland, P., Ben-Ezra, M. & Shevlin, M. (2023). Early maladaptive schemas and ICD-11 CPTSD symptoms: Treatment considerations. *Psychology and Psychotherapy: Theory, Research and Practice*, 96, 117–128. <https://doi.org/10.1111/papt.12429>