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Review

Emotional Dysregulation in Complex Post-Traumatic Stress Disorder: a narrative review

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SUMMARY

Emotional Dysregulation (ED) refers to difficulties in managing emotions effectively, leading to a wide range of manifestations, including outbursts of anger, overwhelming sadness, and emotional numbness. Being part of the disturbances of self-organisation, ED is a core symptom of Complex Post-Traumatic Stress Disorder (cPTSD), and it severely affects patients' functioning and overall quality of life.

This narrative review explores the intricate relationship between ED and cPTSD. To this end, the concept of ED will be defined, including how it can be assessed, its contribution to the disorder's symptoms, and an examination of ED's role in the development and maintenance of cPTSD. Furthermore, an assessment of its physiological effects and importance for enhancing treatment outcomes will also be outlined.

ED also has an important role in explaining the comorbidities of cPTSD. These include substance use disorder, suicidality, depression, and anxiety, whose association might be mediated by ED, which serves as a key proxy for patients' worse clinical outcomes. As such, it may be helpful for clinicians to recognise, assess, and treat ED but also to target and treat its comorbidities simultaneously.

Awareness of the link between ED and cPTSD is crucial to consider when developing treatment plans tailored to the patient's characteristics. This can be aided by the availability of various rapid ED assessment tools, some of which may be suitable for deployment in multiple settings, ranging from primary care to scientific research.

Key words: cPTSD, emotional dysregulation, trauma, disturbances of self-organisation, comorbidities, treatment

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Introduction

Emotions are complex reaction patterns that include psychological, physiological (autonomic and neuroendocrine), and behavioural responses. The type of emotion is influenced by the situation that triggers it, and the resulting emotional response can, in turn, impact the situation[2]. Emotion regulation refers to the processes aimed at modulating the characteristics of emotions — such as intensity and duration — with the ultimate goal of decreasing, increasing, or maintaining them. These processes can involve situation selection, situation modification, attentional deployment, cognitive change, and response modulation[1] and be explicit (i.e., the subject is aware of their effort in trying to regulate their emotions) or implicit (i.e., routine automatic processes)[3,4].

On the contrary, emotional dysregulation (ED) refers to a deficit in effectively managing the processes essential for emotional regulation. Individuals with ED struggle to accurately recognise and manage their emotions,

often leading to extreme or inappropriate emotional responses when faced with an emotional trigger. This condition can significantly impair their ability to function optimally[2]. It can be caused by an overactive fight-or-flight response, a deficit in cortical modulation of an active fight-or-flight response, or, at times, both[5].

ED has been inconsistently defined in scientific literature, and the term has often been used interchangeably with terms like affective instability and mood instability. However, there is a need to differentiate the terminology and educate professionals accordingly to achieve effective clinical practice. Additionally, distinguishing between ED as a trait and ED as a state is essential. The former is characterised by symptoms that persist over time, while the latter is temporary and usually triggered by specific stressors. This distinction is crucial for diagnosis and treatment alike; on the one hand, a state would be addressed with specific short-term interventions focused on the situational trigger and coping strategies; on the other hand, a trait may require a long-term, targeted treatment[2].

Emotional dysregulation was long overlooked in the psychopathology field; however, it has recently attracted interest among scientists as its clinical importance is becoming increasingly evident[6,7]. It is a transdiagnostic criterion of several disorders, including Complex Post-Traumatic Stress Disorder (cPTSD), Bipolar Disorder (BD), Disruptive Mood Dysregulation Disorder (DMDD), Borderline Personality Disorders (BPD), Schizophrenia Spectrum Disorder (SSD), Attention Deficit Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD)[7]. This overlap can often lead to misdiagnosis[8]; therefore, if a different diagnosis is given and treatment proves ineffective, it is worth considering whether a stress-related disorder might be more accurate[9]. Interestingly, when it comes to disorders specifically associated with stress, ED has a role not only in cPTSD but also in Reactive Attachment Disorder (RAD) and Developmental Trauma Disorder (DTD). DTD has not, to date, been recognised by any diagnostic manual, but it is a proposal for a childhood disorder analogous to cPTSD[10].

A traumatic event is sudden and unexpected, life-threatening, or is perceived as such, or involves intense fear and impotence. It has a profound, intense impact on the senses of the person involved, who feels overwhelmed and unable to cope[11]. These events may be directly experienced or witnessed by the individual, or they can be learned from others. The event thus can be experienced by a close person, or it can be observed in the workplace (e.g., first responders, social workers). cPTSD is a condition listed in the *ICD-11*[12], and it is part of the disorders specifically associated with stress. The prevalence of the disorder varies across different contexts — ranging from 5% to 80,63% in military personnel and veterans[13], between 8.2% and 10.7% in children in foster care, and between 2% and 35.6% in adults who were in foster care[14], and 41% in survivors of human trafficking and modern slavery[15] — and populations, about 3,8% in the United States[16], 7,7% in Ireland[17] and just under 1% in Germany[18]. However, it is important to note that data on the prevalence of cPTSD remains limited due to the relatively recent recognition of the disorder.[19].

Aims of the review

This review seeks to explore the intricate relationship between ED and cPTSD, offering a comprehensive analysis of how these two concepts intersect and influence each other. A key aim is to highlight how ED might be measured and how important its clinical relevance might be in the context of cPTSD. Emotional dysregulation is recognised as a core feature of cPTSD, as outlined in the *ICD-11*[12] under the category of DSO. This review will discuss the profound impact of ED on the overall symptomatology and daily functioning of individuals with cPTSD, emphasising the importance of addressing emotional regulation in treatment plans to improve patient outcomes. Finally, the review also aims to assess current treatment approaches that target emotional dysregulation in trauma-related disorders. This will include an evaluation of both pharmacological and psychotherapeutic interventions, with a focus on evidence-based treatments.

Diagnosing Complex Post-Traumatic Stress Disorder

In the *ICD-11*[12], cPTSD has been differentiated from its sibling disorder PTSD, both disorders are under the "Disorders Specifically Associated with Stress" category. This addition followed several analyses that supported a qualitative distinction between the two disorders[21]. The diagnosis requires a traumatic event or a series of events and the presence of symptoms from six symptom clusters. The first three symptoms clusters overlap with the diagnosis of PTSD: a) re-experiencing the trauma (e.g., flashbacks, nightmares); b) avoidance of trauma-related stimuli (e.g., visiting specific places, talking about the event); c) heightened sense of threat (e.g., hypervigilance, heightened startle reaction, difficulty sleeping and concentrating). The other three symptoms clusters are defined as Disturbances of Self-Organisation (DSO): d) emotional dysregulation; e) difficulties in interpersonal relationships; f) persistent negative self-concept[12,20]

While cPTSD is defined categorically in the ICD-11, it also possesses a dimensional nature. The dimensional nature of cPTSD refers to its spectrum-like characteris-

tics, where symptoms vary in severity and manifestation across individuals rather than fitting strictly into binary categories. This perspective emphasizes that cPTSD symptoms exist along a continuum, particularly within the domain of DSO. For example, emotional dysregulation, interpersonal difficulties, and persistent negative self-concept can range from mild to severe, depending on factors such as the type, duration, and timing of trauma, as well as individual resilience and coping mechanisms. Adopting a dimensional approach allows clinicians to capture the nuanced variations in symptom severity, which is critical for tailoring treatment to individual needs[22]

To assess and diagnose cPTSD, healthcare professionals can use various tools[23], including the International Trauma Questionnaire (ITQ), the International Trauma Interview (ITI), and the cPTSD Item Set Additional to the CAPS (COPISAC).

The International Trauma Questionnaire (ITQ)[24] includes 19 items: 1 assessing the type of trauma that the person has experienced, 6 assessing PTSD symptoms, and 12 assessing DSO symptoms. It is the most validated assessment tool for diagnosing cPTSD to date[23], and it has been translated and validated in multiple languages[25-27].

The International Trauma Interview (ITI) is a clinician-administered assessment. While studies on its validity are still very limited, preliminary data indicate high internal reliability for the diagnosis but poor to moderate diagnostic agreement with the ITQ. Despite these limitations, the ITI seems promising and could potentially increase diagnostic concordance among clinicians.[28,29].

Another interview is the cPTSD Item Set Additional to the CAPS (COPISAC), designed to be used in conjunction with the Clinician-Administered PTSD Scale (CAPS). While the CAPS evaluates PTSD symptoms, the COPISAC specifically focuses on the DSO symptoms. Its validity is currently still uncertain due to the lack of studies[30].

Clinicians can also adapt PTSD diagnostic tools such as the Post-Traumatic Stress Disorder Checklist (PCL-5)[31] and the Trauma Symptom Inventory (TSI-2)[32]. Additionally, tools that investigate trauma types often associated with cPTSD, like the Childhood Trauma Questionnaire (CTQ)[33], and those focusing on specific DSO symptoms, such as the Difficulties in Emotional Regulation Scale (DERS) for ED, can also be employed.

Lastly, healthcare professionals attempting to diagnose cPTSD should prioritise creating a calm and safe environment and establishing trust with the patient. They should also keep in mind that people who endure traumatic events, especially the prolonged interpersonal events that are more often associated with cPTSD, present with a wide variety of symptoms and comorbidities; therefore assessments should also include biopsychosocial aspects —such as physical health problems, substance abuse, dissociation, and suicidal ideation— and environmental risks and stressors, such as ongoing domestic violence or homelessness[19,23].

Quantifying emotional dysregulation

To measure emotional dysregulation, professionals use specific assessments (Fig. 1) such as the Difficulties in Emotion Regulation Scale (DERS), the Emotion Regulation Questionnaire (ERQ), and the Emotion Dysregulation Scale - Short Version (EDS-short).

The Difficulties in Emotion Regulation Scale (DERS) is a self-report questionnaire that includes 36 items (e.g., “I experience my emotions as overwhelming and out of control”), each rated on a Likert scale ranging from 1 (almost never) to 5 (almost always), depending on how frequently the respondent experiences the difficulties described. It analyses six dimensions of emotion regulation: (a) awareness and understanding of emotions; (b) acceptance of emotions; (c) the ability to engage in goal-directed behaviour and (d) to refrain from impulsive behaviour when experiencing negative emotions; (e) access to emotion regulation strategies perceived as effective; and (f) the lack of emotional clarity[34]. It has been validated with adults and adolescents, and it has also been translated into multiple languages[35,36]. A shorter form (DERS-SF) has been developed to reduce assessment time, simplify scores, and lighten respondent burdens. Confirmatory factor analyses show that the short version also effectively evaluates the various dimensions of emotional dysregulation in adolescents and adults[37].

The Emotion Regulation Questionnaire (ERQ)[38] includes 10 items (e.g., “When I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about”), each rated on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Unlike the DERS, the ERQ emphasises emotional regulation strategies and assesses their maladaptive nature. The ERQ has proven to be a reliable tool across different populations[39,40], though it may show a weaker correlation with symptoms of depression and anxiety when compared to the DERS[41-45].

Another brief assessment tool for emotional dysregulation is the Emotional Dysregulation Scale - Short Version (EDS-short). This 12-item self-report measure evaluates emotional experience, cognition, and behaviour (e.g., “When I am upset, I have trouble remembering that people care about me”). EDS-short has been compared to the Difficulties in Emotion Regulation Scale (DERS) in predicting issues like depression, post-traumatic stress, substance abuse, and resilience, demonstrating good construct validity. However, it does not assess the non-

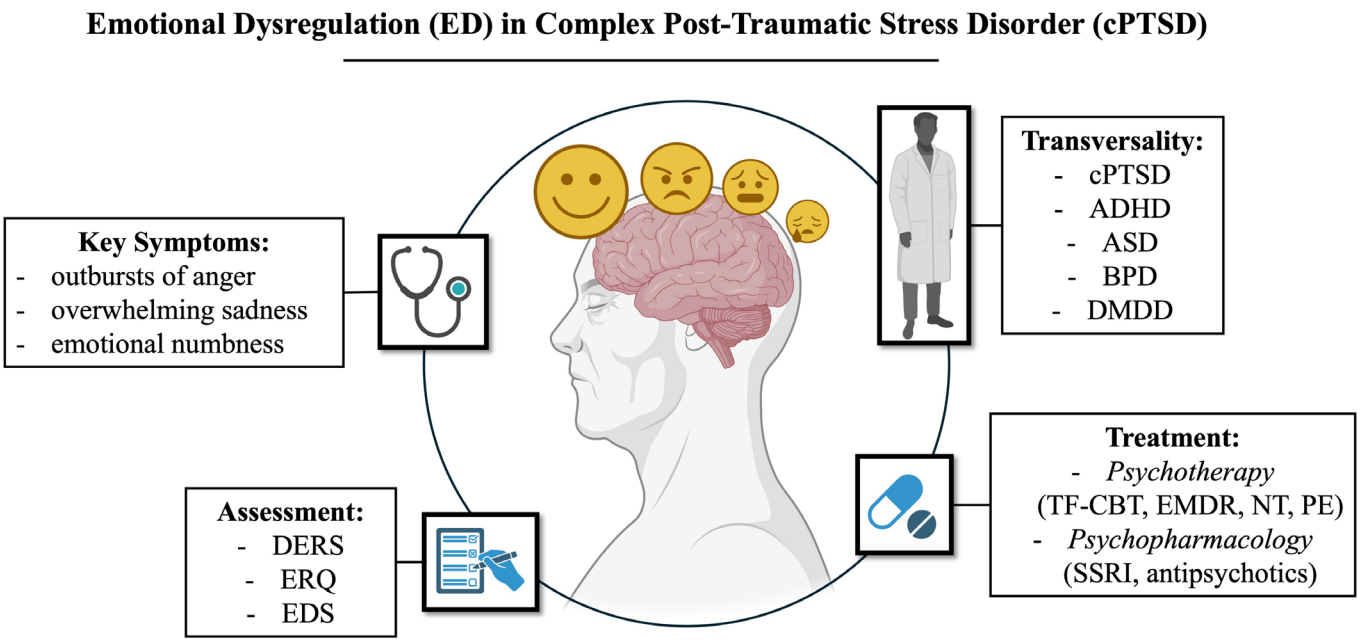

FIGURE 1. *Core symptoms of Emotional Dysregulation (ED) in Complex Post-Traumatic Stress Disorder (cPTSD), including anger outbursts, overwhelming sadness, and emotional numbness. ED is a transdiagnostic criterion shared with other disorders, such as Attention Deficit - Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Borderline Personality Disorder (BPD), and Disrupted Mood Dysregulated Disorder (DMDD). Tools for assessment include the Difficulties in Emotion Regulation Scale (DERS), Emotion Dysregulation Scale (ERQ), and Emotion Dysregulation Scale (EDS). Treatments feature psychotherapy [e.g., Trauma-Focused Cognitive Behavioural Therapy (TF-CBT), Eye Movement Desensitization and Reprocessing (EMDR), Narrative Therapy (NT), Prolonged Exposure (PE), and psychopharmacology (e.g., SSRIs, antipsychotics).*

acceptance of emotions, emotional awareness, or emotional clarity, which DERS covers. Taking about five minutes or less to administer, EDS-short is ideal for large-scale studies and quick diagnostic evaluations, though it is not intended to replace DERS[46].

Conceptually related assessments, such as the Distress Tolerance Scale (DTS), the Impulsive Behavior Scale (UPPS-P), and the State-Trait Anger Expression Inventory (STAXI), may also be considered.

The Distress Tolerance Scale (DTS)[47] is a self-report questionnaire that includes 15 items (e.g., "My feelings of distress are so intense that they completely take over"), each rated on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Distress tolerance showed moderate negative association with emotional dysregulation[47]; therefore, people with lower distress tolerance are more likely to have difficulties with emotional regulation[48].

The Impulsive Behaviour Scale (UPPS-P)[49] is a self-report questionnaire that includes 59 items designed to assess five dimensions of impulsivity: lack of premeditation, lack of perseverance, sensation seeking, and both negative and positive urgency. A shorter 20-item version (S-UPPS-P) is also available, offering a quicker assessment while maintaining effectiveness[50-52]. Impulsivity is associated with emotional dysregulation, as individuals with high emotional dysregulation often score highly on self-reported impulsivity measures[53]. Additionally, two of the five dimensions of impulsivity are directly related to emotions: negative urgency refers to acting impulsively in response to negative emotions, while positive urgency refers to acting impulsively in response to positive emotions[49].

The State-Trait Anger Expression Inventory (STAXI)[54] is a 44-item assessment tool designed to measure anger both as a state — reflecting a response to a specific, immediate situation — and as a trait, therefore, as a predisposition to react with anger to a wide range of experiences. Anger as a trait is likely to be a result of emotional dysregulation[55], and it is closely linked to childhood trauma, as individuals who experience such trauma often exhibit anger as a trait in adulthood. This tendency can stem from having modelled the emotional dysregulation of caregivers who abused them, leading to the internalisation of these maladaptive emotional responses. Additionally, children may have been constantly attuned and hyper-vigilant to signs of impending outbursts, which likely contributed to developing

a biased perception that others may be hostile. This heightened vigilance can increase anger outbursts as adults, as they may misinterpret neutral or ambiguous situations as threatening[56].

Anatomical and Physiological Alterations of Emotional Dysregulation in Trauma-Related Disorders

ED is associated with neural circuit disruptions in emotional processing. More specifically, the areas involved (Fig.2) are the ventromedial prefrontal cortex extending to the subgenual cingulate cortex, the right anterior insula extending to the ventrolateral prefrontal cortex, the thalamus (dorso-medial extending to pulvinar nuclei), the left and right amygdala extending to hippocampal and parahippocampal gyri, and the inferior occipital cortex. Tasks associated with emotional regulation showed disruptions, particularly in the right ventrolateral prefrontal cortex, an area associated with signaling non-reward, with afferent and efferent connections to the amygdala and sensory cortex and afferent connections from the anterior insula. These circuit disruptions are observed across various psychiatric disorders, which is noteworthy considering the likelihood of comorbidities in psychiatry[57].

The brain alterations associated with ED in PTSD are highly variable because emotional dysregulation is a multifaceted concept. The timing and nature of the trauma — whether occurring in childhood or later, and whether involving single or multiple events — influence these alterations. Nevertheless, the brain regions commonly involved include the amygdala, insula, hippocampus, anterior circulate cortex, and prefrontal cortex, consistent with the above-mentioned[58]. Specifically, research has found evidence indicating an excessive reaction to threats, characterised by hyperactivation of the amygdala and insula, and a deficiency in regulation, observed in the anterior cingulate cortex and prefrontal cortex. This is likely caused by an impairment in dis-

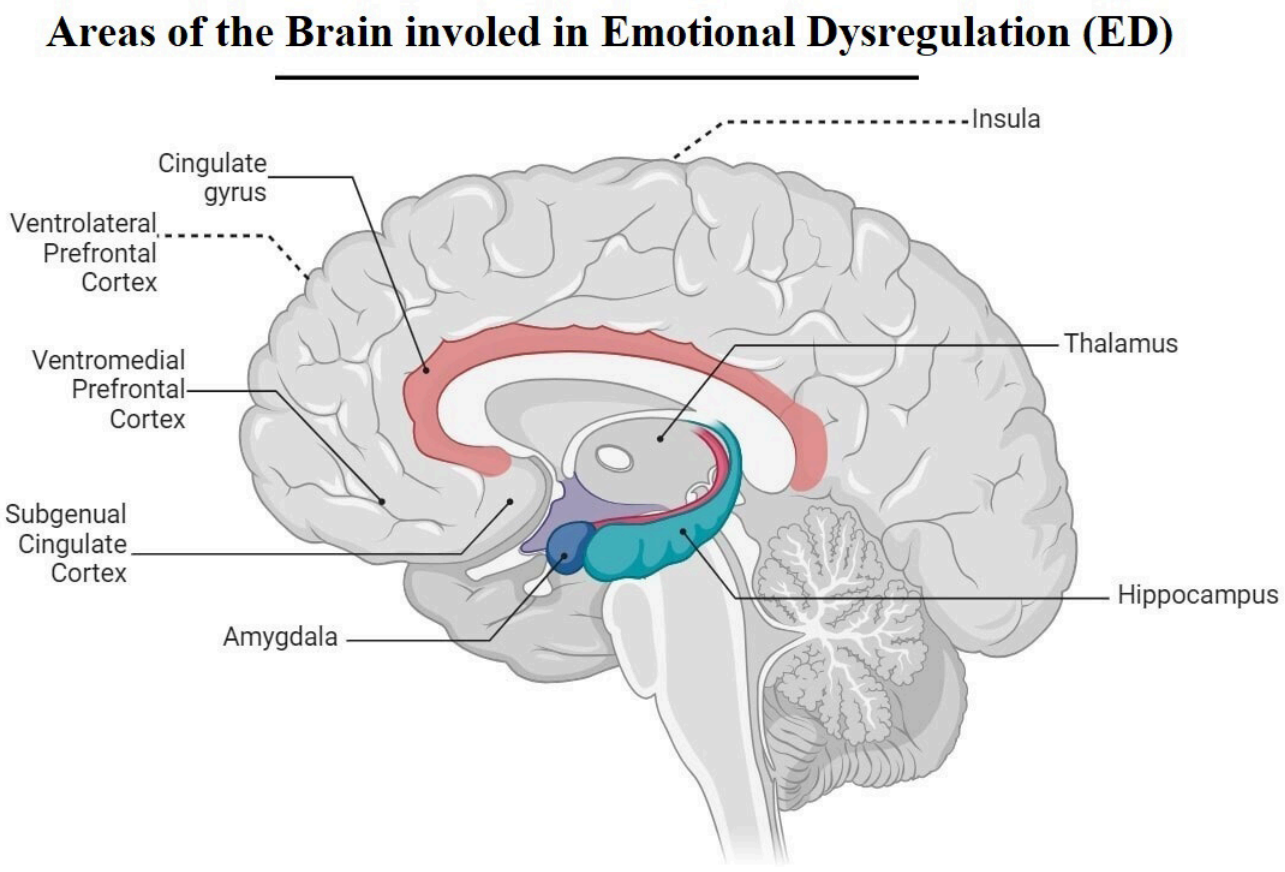

FIGURE 2. *Areas involved in neural circuit disruptions in Emotional Dysregulation (ED) include Ventrolateral and Ventromedial Prefrontal Cortex, Subgenual Cingulate Cortex, Insula, Cingulate Gyrus, Amygdala, Thalamus and Hippocampus.*

tinguishing between safe and threatening; for example, a non-threatening cue, like a neutral face, can be perceived as threatening and lead to hyperarousal[59]. There is also a physiological link to emotional numbing, as evidenced by the fact that individuals with PTSD exhibit reduced activation in the amygdala and ventral striatum (which are involved in reward processing) when viewing happy faces compared to non-traumatised individuals[60].

Some of the specific connections between particular types of trauma and brain alterations have been researched. For instance, Adverse Childhood Experiences (ACEs) can impact brain development and lead to epigenetic changes. Individuals with PTSD related to childhood abuse were found to have smaller intracranial and cerebral volumes and larger ventricular volumes. The volume is positively correlated with the age of onset of the trauma and negatively correlated with the duration of the maltreatment experience(s). Therefore, smaller volumes are correlated with younger age and/or longer maltreatment[61]. While proving this is difficult due to the ethical constraints of conducting randomised controlled trials, studies have shown that ACEs are linked to measurable changes in brain structure and function. Specifically, reduced volumes in the hippocampus and prefrontal cortex have been observed. The amygdala may either increase or decrease in size, likely depending on the timing and nature of the trauma exposure[62]. Another example is the case of survivors of human rights violations, such as torture and wartime experiences, who present no history of childhood abuse. These patients often exhibit abnormally high activation in the anterior cingulate cortex and medial prefrontal cortex, leading to hyperinhibition of limbic regions and ultimately causing dissociation[63].

Within the predictive processing paradigm, prolonged exposure to trauma can disrupt the brain's ability to process and predict internal bodily signals (interoception) under conditions of uncertainty, further complicating affect regulation. This model proposes that trauma recalibrates the brain's hierarchical systems, particularly hyper-priors, which are abstract expectations about safety. Once adjusted to accommodate chronic unpredictability, these priors skew perception toward overpredicting threats in otherwise benign environments. This fosters persistent states of prediction error, straining emotional and physiological resources, and perpetuating hypervigilance and emotional dysregulation[64].

The role of interoception - the ability to perceive internal bodily signals - is critical in this context. Studies suggest that atypical interoceptive sensitivity, ranging from reduced attention to internal states to overwhelming attentiveness, mediates the relationship between early trauma and subsequent emotional dysregulation. Schmitz et al. (2023, 2021) found that interoceptive dysfunction could serve as a mechanistic link, explaining how childhood trauma shapes emotional dysregulation. Altered interoceptive processing, including heightened sensitivity to physiological signals or diminished awareness of bodily sensations, disrupts affect regulation and contributes to ED in cPTSD[65,66].

Emotional Dysregulation in Patients with Complex Post-Traumatic Stress Disorder (cPTSD)

cPTSD typically arises from chronic or repeated traumatic experiences, such as childhood sexual, physical, and emotional abuse, intimate partner violence[67], prolonged combat exposure, war captivity[68], civil unrest, and forcible displacement[19,69]. Therefore, these traumatic experiences typically occur during childhood or involve a severe interpersonal component[70]. However, while these events are significant risk factors, they are not absolute requirements for the disorder. Personal and environmental factors, such as social support and individual resilience, are crucial in shaping outcomes. For example, someone with a strong interpersonal network might experience these types of traumatic events and develop PTSD (rather than cPTSD), whereas an individual who is isolated and has limited social support may develop cPTSD from a single traumatic event due to dispositional vulnerabilities[19]. cPTSD differs from PTSD not only for a higher gravity of post-traumatic symptoms (PTSS)[78] but also for worse clinical outcomes, ranging from increased suicidal rates[71,72], dissociative experiences[73], psychotic symptoms[74], and greater odds of substance use disorder[75,76].

ED is a core feature of cPTSD and plays a central role in both the development and maintenance of the disorder. This difficulty regulating emotions is often linked to early prolonged traumatic experiences, as these can significantly undermine the development of healthy emotional regulation skills. These difficulties in emotional regulation can, in turn, contribute to the persistence of trauma-related symptoms[77,78]. While a connection has been established, it remains unclear whether emotional dysregulation is merely a consequence of trauma exposure or if it precedes trauma, serving as a risk factor[78]. The behavioural manifestations of ED in cPTSD are diverse and often severe. Individuals with cPTSD frequently experience emotional lability, which refers to extreme fluctuations in mood and emotional state. This can range from sudden outbursts of anger to episodes of overwhelming sadness, emotional numbness, or despair. Such fluctuations can be triggered by seemingly minor stressors, which, for others, might not elicit such extreme emotional reactions[19]. One common behaviour-

al pattern in trauma-related disorders is anger dysregulation, where individuals exhibit uncontrolled expressions of anger and irritability. Research suggests that individuals with PTSD, possibly also cPTSD, are more prone to impulsive, aggressive behaviours, particularly in response to interpersonal triggers. This is often due to a heightened sensitivity to perceived threats, even in situations that would not normally provoke such intense emotional responses[79-82].

In contrast to explosive anger, emotional numbness is another prominent symptom of emotional dysregulation in cPTSD. This involves a reduced capacity to experience positive or negative emotions. Individuals may become disconnected from their emotional responses as a coping mechanism to avoid the distress associated with trauma-related memories or situations. Emotional numbing can significantly impair social functioning, as individuals may withdraw from relationships or have difficulty connecting with others emotionally[83]. Moreover, cPTSD is associated with persistent feelings of overwhelming sadness or despair. This can manifest in prolonged periods of depressive moods, where individuals experience a pervasive sense of hopelessness and worthlessness[71]. Emotional dysregulation in these cases is often linked to internalised negative self-perceptions, a core component of the DSO cluster in cPTSD[75].

These emotional and behavioural symptoms can create a vicious cycle. Dysregulated emotional responses can lead to negative outcomes in interpersonal relationships, exacerbating feelings of isolation and emotional instability, further fuelling the dysregulation[19]. For example, the inability to control emotional responses during conflicts can damage close relationships, which in turn diminishes the individual's social support network, a crucial protective factor in managing trauma-related disorders.

For all these reasons, behavioural symptoms of ED in cPTSD have a profound and detrimental impact on individuals' quality of life. Emotional instability, combined with the other core features of cPTSD, significantly impairs everyday functioning, creating barriers to both personal and professional success[28,84].

One of the key areas affected is interpersonal relationships. The intense emotional reactions, coupled with emotional numbness, often make it difficult for individuals with cPTSD to maintain healthy and stable relationships. Research has shown that the emotional volatility associated with cPTSD leads to chronic interpersonal conflicts, often resulting in relationship breakdowns[85]. Individuals may isolate themselves because they feel unable to manage their emotions or believe they are unworthy of social connections. This isolation can contribute to the worsening of symptoms and further reduce the individual's access to support networks, perpetuating a cycle of emotional dysregulation and relational dysfunction[86].

Furthermore, emotional dysregulation in cPTSD significantly impacts occupational functioning. Studies have shown that individuals with cPTSD often struggle in work environments due to difficulties in managing stress and emotional responses to workplace challenges. Emotional outbursts or withdrawal in professional settings can result in job loss or difficulty maintaining consistent employment[87].

Substance use and self-harm are also common coping mechanisms for those experiencing emotional dysregulation in cPTSD. The inability to regulate emotional responses can drive individuals toward maladaptive behaviours, such as substance abuse, as a way to numb overwhelming feelings or calm heightened emotional states. Research has demonstrated that individuals with cPTSD have significantly higher rates of substance use disorders compared to those with PTSD, suggesting that emotional dysregulation plays a key role in the development of these comorbid conditions[75].

In terms of overall well-being, individuals with cPTSD and significant emotional dysregulation report a lower quality of life, with high rates of suicidal ideation and attempts. The pervasive sense of hopelessness and the inability to manage emotional pain can lead individuals to view suicide as the only solution to their suffering. Studies indicate that individuals with cPTSD are at a higher risk of suicide compared to those with PTSD alone, underscoring the importance of addressing emotional dysregulation as part of treatment[71,72,88].

In summary, the behavioural symptoms of emotional dysregulation in cPTSD – ranging from outbursts of anger and emotional numbness to overwhelming sadness – profoundly impact an individual's ability to function in daily life. These symptoms lead to difficulties in relationships, occupational struggles, and engagement in harmful coping mechanisms like substance use or self-harm. Consequently, emotional dysregulation not only perpetuates the trauma-related symptoms of cPTSD but also severely diminishes the individual's quality of life[88].

Therapy Approaches for cPTSD and Emotional Dysregulation

Guidelines such as those from the International Society for Traumatic Stress Studies (ISTSS)[89], the American Psychological Association (APA)[90], and the National Institute for Health and Care Excellence (NICE)[91] strongly recommend Trauma-Focused Cognitive Behavioural Therapy (TF-CBT), Eye Movement Desensitization and Reprocessing (EMDR), Narrative Therapy (NT) and Prolonged Exposure (PE) for the treatment of PTSD. Pharmacological interventions can also be considered,

notably SSRIs such as sertraline and paroxetine, which are FDA-approved, and antipsychotics, such as risperidone, off-label.

If a patient has complex needs, additional considerations are necessary. For instance, if the patient also suffers from depression, the primary focus should be on treating PTSD, as improvements in PTSD can alleviate depressive symptoms. However, if there is a risk of the patient harming themselves or others, then depression should be addressed first. Similarly, if there are issues like emotional dysregulation that hinder trauma-focused therapies, these should be prioritised and resolved before proceeding[91].

Processing traumatic events through psychological treatment has been proven to be successful, and long-term benefits are superior to those found, for instance, with pharmacological interventions[92]; it can, however, lead to symptom exacerbation and high drop-out rates in patients with ED[93]. To improve treatment outcomes for cPTSD, particularly in patients experiencing ED, it is recommended to focus on training programs that enhance emotional regulation skills before introducing other forms of therapy.

Some researchers argue that improvements in ED can be achieved through treatments that do not specifically target ED. For instance, Jerud et al[94] examined improvements in ED following Prolonged Exposure therapy or sertraline treatment, assessing ED at 3- and 6-month follow-ups. Their findings indicated that patients with pre-existing ED deficits experienced significant improvement after these treatments. The improvements in ED observed with sertraline treatment are likely due to its effects on the serotonin system.

However, treatments specifically targeting ED may be needed; the STAIR-NT is one of the protocols. STAIR stands for Skills Training in Affective and Interpersonal Regulation and has been proven to be an effective way to improve the patients' quality of life and increase the success of exposure therapy. Additionally, it aids in forming the therapeutic alliance. Once the patient has acquired these new skills, Narrative Therapy (NT) can be performed. Patients show significant improvement in ED during phase 1 (STAIR) of the treatment and improvement in PTSD symptoms during phase 2 (NT)[95]. Furthermore, a higher score of the symptom Burden and Emotion Regulation (BER) score (levels 3 and 4) seem to benefit more from STAIR followed or not with exposure therapy than from exposure therapy alone, suggesting that this should be the preferred treatment for patients with higher levels of ED[96].

Wigard et al.[97] conducted a study comparing STAIR followed by NT with STAIR followed by EMDR in individuals who had experienced physical and/or sexual abuse before the age of 17. Both treatments were found to be effective in reducing symptoms such as PTSS and ED, with no significant difference in dropout rates between the two groups. Most therapeutic improvements appeared to occur during the NT and EMDR phases, leading the authors to recommend further research on phase-based treatments and the effectiveness of STAIR therapy. The STAIR protocol has also been tested on veterans. Jain et al.[98], in particular, evaluated a five-session protocol in primary care, and the treatment showed excellent promise in improving PTSD symptoms, depression, ED, and interpersonal skills. This could be particularly relevant as patients are often first seen in a primary care setting.

The STAIR-NT protocol was developed before the approval of the cPTSD diagnosis in the *ICD-11*[12]. ESTAIR (Enhanced Skills Training in Affective and Interpersonal Regulation) is an adjourned protocol that considers the added criteria of DSO. While the ESTAIR protocol shows great promise, it is limited by the need for skilled clinicians and the burden of routine assessments on some health services[99].

Patients with cPTSD may use cannabis as a form of self-medication[75]. However, while further research is needed in this area, early evidence suggests that once the short-term euphoric effects wear off, patients often experience increased depression, a loss of self-confidence, and reduced motivation to engage in social activities or pursue beneficial treatments. Furthermore, although cannabis might aid in managing ED, ED also increases susceptibility to impulsive behaviours, elevating the risk of problematic substance use. Additionally, discontinuing cannabis can lead to withdrawal symptoms, such as sleep disturbances and nightmares, which are already prevalent in individuals with cPTSD[100].

Lastly, psychedelics are also being explored as potential treatments. MDMA, in particular, may act as a catalyst in psychotherapy by fostering empathy and trust, strengthening the therapeutic relationship, and self-awareness while allowing patients to maintain clear memories of the experience[101]. Classical psychedelics, such as psilocybin and LSD, have been shown to trigger neurobiological changes that may aid treatment by promoting emotional empathy and mindfulness, though their psychological effects can vary. Ketamine also shows potential, as it promotes synaptic plasticity, blocks memory consolidation, and enhances fear extinction in rodents. Nonetheless, further research is needed for all these substances[102].

Discussion

This paper explores the central role that ED plays in the development and maintenance of cPTSD (Fig. 1). ED is one of the main causes of the functional impairments seen in cPTSD, and it can negatively affect treatment

outcomes when not considered. Effectively measuring ED in cPTSD is vital for tailoring therapeutic interventions and evaluating treatment outcomes. Considering the availability of questionnaires to assess emotional dysregulation, we believe it could be valuable to incorporate these as a routine screening tool in emergency and psychiatric departments and primary care, where individuals are most likely to seek help following a traumatic experience[103].

The physiological effects of ED in cPTSD include changes in the structure and function of the brain and epigenetic modifications, highlighting the relevance of considering ED with these patients. These physiological markers affect psychological states and increase vulnerability to comorbid conditions. Given the high prevalence of comorbid conditions, ranging from psychotic-like experiences[104] to substance use disorders[75] among individuals with cPTSD, addressing ED is essential not only for improving cPTSD symptoms but also for mitigating the severity of comorbid conditions as ED may serve as a common underlying factor that exacerbates these comorbidities and can therefore be a therapy target for more than one condition at once[105].

ED should be viewed as a primary treatment target in cPTSD, rather than a secondary symptom. While current first-line therapies for cPTSD, such as Dialectical Behavior Therapy (DBT), trauma-focused cognitive-behavioural therapies (TF-CBT), and prolonged exposure (PE), may sometimes effectively address ED, multiphase treatments that incorporate skills training, like ESTAIR, could offer a more suitable approach, particularly for patients with severe ED. In light of this, further research is necessary to understand how individual characteristics influence the suitability of specific treatments for different patients[106].

The evidence presented in this paper highlights the relevance of ED in the assessment and treatment of cPTSD. By addressing the multifaceted effects of ED, healthcare professionals can better support individuals in their journey toward recovery. Future research should aim to refine the understanding of how ED develops in response to prolonged trauma and how it can be best assessed and most effectively utilised for treatment. Longitudinal studies examining the trajectory of ED during treatment will be critical in understanding its role in recovery from cPTSD. Moreover, exploring personalised treatment approaches, where ED is treated based on individual profiles, may lead to more effective interventions. Clinically, the findings emphasize the need for trauma-informed care that prioritises emotion regulation, acknowledges the physiological impact of trauma, and addresses the complex interplay between emotional and physiological dysregulation.

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Conflict of interest statement

The Authors declare no conflict of interest.

Authors' contributions

TBJ: Writing - Review and Editing and Conceptualization; GD: Writing - Original Draft; RR: Writing - Review and Editing; CN: Writing - Review and Editing; GDL: Conceptualization and Supervision

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