Complex Trauma Interventions for Children and Adolescents

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KEYWORDS

• Complex trauma • Polyvictimization • Children • Adolescents • Mental health
• Posttraumatic stress • Childhood trauma

KEY POINTS

- Complex trauma consists of exposure to multiple or prolonged forms of interpersonal trauma during vulnerable developmental periods, resulting in significant disruptions in attachment, regulation, and self-concept.
- Behavioral interventions for complex trauma focus on building physical and psychological safety, regulation capacity, processing or integration of traumatic memory, and developmental competencies that are specific to the individual given their age and stage.
- Complex trauma interventions serve youth across the developmental continuum (ie, ages 0–21 years) using a variety of methods (ie, individual, group and family therapy, caregiver groups, systemic applications, and so forth).
- Several symptoms of complex trauma are mediated by neurobiological changes that can be targeted by pharmacologic and nonpharmacological interventions.

BACKGROUND

What Is Complex Trauma?

Complex trauma was first described over 30 years ago to capture the clinical presentations of adults who had experienced prolonged and repeated trauma in childhood.[1] The term complex trauma encompasses both exposure to multiple types of interpersonal trauma and associated psychological sequelae, overlapping with recent conceptualizations of developmental trauma disorder (DTD)[2] and complex posttraumatic stress disorder (C-PTSD).[3,4] The exposure element of complex trauma is defined as chronic or prolonged exposure to multiple forms of interpersonal trauma or maltreatment during vulnerable developmental stages, often within the early caretaking environment.[5,6]

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Abbreviations	
ARC	Attachment, Regulation and Competence
BDNF	brain-derived neurotrophic factor
CNS	central nervous system
CPP	Child Parent Psychotherapy
C-PTSD	complex posttraumatic stress disorder
DTD	developmental trauma disorder
ICD-11	*International Classification of Diseases*, 11th Revision
ITCT	Integrative Treatment of Complex Trauma
PNS	peripheral nervous system
PTSD	posttraumatic stress disorder
RCTs	randomized controlled trials
RLH	Real Life Heroes
SFCR	Strengthening Family Coping Resources
SMART	Sensory Motor Arousal Regulation Treatment
SPARCS	Structured Psychotherapy for Adolescents Responding to Chronic Stress
TARGET	Trauma Affect Regulation: Guide for Education and Therapy
TF-CBT	trauma-focused cognitive behavioral therapy
TST	Trauma Systems Therapy

For example, repeated psychological maltreatment by a caregiver, along with sexual and physical abuse, is a common "constellation" of trauma exposure observed in clinical populations[7] indicative of complex trauma. The core features of the exposure element of complex trauma spring from research evidence demonstrating that specific facets and features of traumatic events—such as trauma that is interpersonal in nature (eg, sexual, physical, or emotional abuse), repeated and/or chronic (eg, ongoing neglect, repeated exposure to domestic violence, and so forth), or occurs during vulnerable developmental periods (eg, early childhood, adolescence)—are linked to more severe and pervasive negative outcomes.[8]

Prevalence rates of complex trauma vary. Among nationally representative samples of youth, 17.8% report "polyvictimization" (ie, exposure to 4, 5, or more forms of trauma).[9] Among clinical samples, exposure to multiple trauma can be upwards of 70% to 80%.[10,11] Youth with systems involvement evince particularly elevated rates of exposure to complex trauma—among child welfare involved youth upward of 70%,[10] in juvenile justice settings 35%,[12] and among youth in congregate care upward of 80%.[11]

Complex trauma leads to complex clinical outcomes

In community mental health and hospital settings, through which trauma-impacted, vulnerable youth often seek mental health care, exposure to complex trauma is often a predisposing factor for the psychological symptoms and functional problems driving treatment referral. Complex trauma is associated with a range of negative outcomes, including heightened rates of posttraumatic stress, depression, suicidality, internalizing problems, substance use, aggression, and delinquency.[10–13] These complex clinical profiles are characterized by comorbidity, high-risk behaviors (eg, self-harm, suicidality, high-risk sexual behavior, and so forth), and a range of other behavioral, emotional, and functional challenges (eg, difficulties with adult and peer relationships, disrupted information processing, poor regulation of emotions and behavior, impaired self-concept, and so forth).[8] Underlying this clinical complexity are key aspects of the child's development that have been derailed by complex trauma—namely disruptions to the child's attachment with their primary caregiver and undermined biopsychosocial regulation.[2]

The clinical profiles associated with complex trauma exposure are not succinctly captured by currently available *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM 5)[14] diagnoses. This leads to the use of multiple diagnostic labels, polypharmacy, and application of therapeutic approaches that may address aspects of the clinical picture, while failing to be holistic.[2] In addition, due to the high levels of emotional and behavioral dysregulation among children and youth with histories of complex trauma, these youth are more likely to be misdiagnosed with attentional or behavioral disorders (eg, attention deficit hyperactivity disorder, conduct/oppositional defiant disorder), a problem that is more pronounced for youth who have systems involvement. Additional diagnostic conceptualizations have been proposed to more accurately and concisely describe the symptom profiles of complex trauma, including DTD (**Box 1**)[2] and the *International Classification of Diseases*, 11th Revision (ICD-11) diagnosis of C-PTSD (**Box 2**).[3] Common across these conceptualizations are evident developmental disruptions in child/adolescent: (1) attachment and interpersonal relationships, (2) regulation capacity across emotional, physiologic, cognitive, and behavioral domains, and (3) persistent negative beliefs about the self, others, and the world at large.

Youth with histories of complex trauma who suffer from symptoms of posttraumatic stress, emotional dysregulation, anger, and/or dissociation may engage in high-risk behaviors (eg, substance use and risky sexual behaviors) to mitigate their emotional distress. In addition, they may have information processing deficits that undermine their ability to accurately detect and respond to threat. Increased risk-taking behavior and difficulties with assessing risk, in turn, make youth vulnerable to revictimization.[15] This confluence of factors—trauma followed by distress, followed by maladaptive coping, followed by risk taking and further trauma—place these youth on a pathway of continued dysfunction, increasing the likelihood of child welfare involvement and placement in restrictive settings (eg, juvenile and criminal justice systems and congregate care settings). Indeed, as noted earlier, rates of exposure to multiple trauma within these settings is exceedingly high, pointing to a need for interventions that can address clinical complexity within a range of treatment settings.

DISCUSSION

The Critical Need for Interventions for Complex Trauma

The need for intervention approaches to address the specific clinical needs of individuals impacted by complex trauma was first raised by Herman, who noted that survivors of prolonged, repeated trauma exhibit a unique set of psychological sequelae (eg, dissociation, somatization, protracted depression, relational disruptions, and negative sense of self) that are distinct from PTSD. Because complex trauma is interpersonal in nature (ie, is perpetrated by a trusted adult, often who is in a caregiving role), thereby undermining development of secure attachments, children exposed to complex trauma are more likely to display long-term disruptions in relational functioning.[5] Related to both disrupted attachment and the timing of complex trauma during vulnerable developmental periods, disruptions in neurobiology and subsequently regulation capacity—across physiologic, emotional, and cognitive (ie, attentional/executive functions, consciousness/dissociation) arenas—results, key drivers of increased incidence and severity of psychopathology.[6] Finally, complex trauma can also result in "hallmark" features of posttraumatic stress, including intrusions, hypervigilance and hyperarousal, and avoidance.

Taken together, these key features point to the need for interventions that address (1) psychoeducation about complex trauma, (2) establishment of physical and psychological safety, (3) development of secure attachment relationships, (4) enhanced

Box 1
Developmental trauma disorder criteria

Criterion A: lifetime exposure to 2 types of stressors:
A1: Interpersonal victimization: experienced or witnessed physical or sexual assault or abuse, or witnessed family or community violence;
A2: Disruption in attachment bonding to primary caregiver(s): loss of, prolonged separation from, or neglect by a primary caregiver.

Criterion B (current emotion or somatic dysregulation, 4 items; 3 required for DTD):
B1: Emotion dysregulation, either
B1.a. Extreme emotional distress or
B1.b. Impaired recovery from emotional distress.
B2: Somatic dysregulation, either
B2.a. Aversion to touch, or
B2.b. Aversion to sounds, or
B2.c. Bodily dysfunction/illness that cannot be medically explained/resolved.
B3: Impaired access to emotion or bodily feelings, either
B3.a. Inability to experience emotion or
B3.b. Anesthesia or paralysis that cannot be medically explained/resolved.
B4: Impaired expression of emotion or body states, either
B4.a. Alexithymia or
B4.b. Inability to express bodily feelings/states in words.

Criterion C (current attentional or behavioral dysregulation, 5 items; 2 required for DTD):
C1: Attention bias to threats, either
C1.a. Preoccupation with real/perceived threats or
C1.b. Impaired ability to recognize actual or potential danger.
C2: Impaired self-protection, either
C2.a. Extreme risk-taking or reckless or careless behavior or
C2.b. Intentional seeking of conflict or violence.
C3: Maladaptive self-soothing: attempts to reduce emotional distress that are primitive and obsessional.
C4: Nonsuicidal self-injury: self-harm intended to reduce/contain distress.
C5: Impaired ability to initiate or sustain goal-directed behavior: consistent problems in independently starting and completing actions designed to achieve personal goals.

Criterion D (current relational dysregulation or self-dysregulation, 6 items; 2 required for DTD):
D1: Self-loathing (viewing self as irreparably damaged or defective).
D2: Attachment insecurity and disorganization, either
D2a. Parentified attempts to protect caregivers or
D2b. Difficulty engaging emotionally with primary caregiver(s) following separation.
D3: Betrayal-based beliefs about relationships, either
D3a. Expectation of betrayal in relationships or
D3b. Oppositional-defiance based on expecting to be coerced or exploited in relationships.
D4: Reactive verbal or physical aggression.
D5: Impaired psychological boundaries, either
D5a. Promiscuous enmeshment—seeking physical or emotional intimacy from any available source or
D5b. Consistently needing emotional reassurance in relationships.
D6: Impaired interpersonal empathy, either
D6.a. Intolerant of others' distress or
D6.b. Excessive responsiveness to others' emotional distress.

From Ford JD. Why We Need a Developmentally Appropriate Trauma Diagnosis for Children: A 10-Year Update on Developmental Trauma Disorder. J Child Adolesc Trauma 2023;16:403–18. https://doi.org/10.1007/s40653-021-00415-4.

regulation capacity, (5) processing and/or integration of traumatic memories, and (6) developmental competencies, strengths, and resiliency factors that are specific to the individual given their age and stage. A critical part of a comprehensive approach to the treatment of complex trauma is the involvement of the child or youth's

Box 2
***International Classification of Diseases*, 11th revision criteria for complex posttraumatic stress disorder**

Diagnostic Requirements

A. Exposure to extremely threatening or horrific events (often prolonged or repetitive) from which escape is difficult or impossible, such as torture, prolonged domestic violence, and repeated childhood abuse.
B. Following the traumatic event(s), symptoms of all 3 elements of posttraumatic stress disorder (PTSD) develop and last for at least several weeks, including
   a. Re-experiencing: intrusive memories, flashback, and/or nightmares that are thematically related to the traumatic event.
   b. Avoidance of trauma reminders: Active internal avoidance of thoughts and memories and/or avoidance of people, places, activities, or conversations that remind the person of the traumatic event.
   c. Hypervigilance and hyperarousal: Feeling under persistent threat, enhanced startle response, and development of behaviors to ensure safety.
C. Severe and pervasive disruptions in affect regulation: Heightened emotional reactivity, behavioral outbursts, reckless/self-destructive behaviors, dissociation, and emotional numbing.
D. Persistent beliefs about the self as diminished, defeated or worthless, along with feelings of shame, guilt or failure related to the trauma.
E. Persistent difficulties in sustaining relationships and emotional intimacy: Avoidance or lack of interest in interpersonal relationships or occasional intense relationships that are not sustained.
F. Disturbance results in significant impairment in personal, family, social, educational, occupational, or other important areas of functioning.
G. Additional features include suicidal ideation and behavior, substance abuse, depression, psychosis, and somatic complaints.

Considerations for C-PTSD in Children and Adolescents

A. Youth more vulnerable to development of C-PTSD due to history of chronic and/or multiple forms of childhood abuse.
B. Youth with C-PTSD are more likely to suffer from cognitive difficulties that undermines academic and occupational functioning.
C. In children, problems with regulation and attachment may manifest as regression, recklessness, aggression toward self or others, dissociation, emotional suppression, avoidance, and difficulties relating to peers.
D. In adolescents, problems with regulation and attachment may manifest as substance use, risky behaviors, and aggression.
E. A disorganized attachment style, reactive attachment disorder or disinhibited social engagement disorder, may be evident among children when parents or caregivers were the perpetrators of early trauma, and may co-occur with C-PTSD.
F. Youth with C-PTSD may report symptoms consistent with other mood, anxiety, eating, sleep, or behavioral disorders, but additional co-occurring diagnoses should be made only if the symptoms are not accounted for by C-PTSD.

From International Classification of Diseases, Eleventh Revision (ICD-11), World Health Organization (WHO) 2019/2021. https://icd.who.int/browse11.

caregiver(s) and/or caregiving systems, both to support the integration of tools and techniques into day-to-day life and because caregivers often require psychoeducation and support in their own regard in order to break the "cycle of trauma" that can persist across generations.[16]

Behavioral interventions for complex trauma

Interventions that utilize a phasic and holistic approach to treatment, with a key emphasis on establishing relational safety and regulation capacity in the early stages

of treatment, followed by trauma processing or integration, are best suited for children and youth impacted by complex trauma. The International Society for Traumatic Stress Studies Expert Consensus guidelines for the treatment of C-PTSD in adults recommends a phasic approach to treatment of complex trauma that includes enhanced focus on building of regulation skills.[17] In addition, recommended modifications to trauma-focused cognitive behavioral therapy (TF-CBT), the most well-researched child trauma intervention, includes an extended treatment phase focused on building regulation skills,[18] again highlighting the importance of enhancing regulation capacity as part of treatment of complex trauma.

There are a number of behavioral interventions that can be used to treat youth with complex trauma across of a range of ages, treatment settings, and implementation methods (**Table 1**). We have chosen to highlight interventions that meet the following criteria. First, the intervention was developed specifically for or has published guidance on modifications for children and youth impacted by complex trauma. Second, the intervention approach delineates strategies to address (1) psychoeducation about trauma and its impact, (2) attachment/relational functioning, (3) emotion dysregulation, (4) negative sense of self, and (5) trauma processing and/or integration of traumatic material. Third, the intervention has published evidence demonstrating effectiveness (ie, statistically significant change from preintervention to postintervention delivery) for reducing symptoms of posttraumatic stress and other related difficulties reflected in the C-PTSD/DTD diagnoses or beyond, such as reductions in symptoms of behavioral and/or mood problems, enhanced emotion regulation, improved attachment/parent–child relational functioning, and/or indicators of adaptive functioning at the individual or systems level (eg, reductions in rates of placement disruptions, reduced use of restrictive practices in congregate care settings, increased caregiver functioning, and so forth). It should be noted that the current evidence base for complex trauma interventions varies from robust (ie, multiple randomized controlled trials [RCTs]) to emerging (ie, quasi-experimental or within group, naturalistic treatment outcome studies). Although RCTs are considered the gold standard to evaluate the efficacy of behavioral interventions, due to the fact that children, youth, and families impacted by complex trauma are overrepresented within systems (eg, child welfare, congregate care, and juvenile justice) where implementation of an RCT design presents practical and ethical challenges, it is paramount to consider a range of evidence when evaluating the effectiveness of potential interventions for this population.

Determining fit of complex trauma interventions for population served

Some key questions to consider when determining which intervention will be the best fit for the population being served include

1. *Age range:* The majority of complex trauma interventions are designed to be used with latency aged children and older. Only CPP has demonstrated effectiveness with very young children (ie, aged less than 3 years, see **Table 1**), although interventions that emphasize or have specific caregiver-focused applications (eg, SFCR and ARC) may be appropriate for supporting caregivers of young children.
2. Service delivery/setting type:
   a. Systems providing short-term services focused on stabilization, such as inpatient psychiatric hospitals or crisis intervention programs, might consider systemic approaches and/or those that can be delivered in a group format (eg, ARC, TST, ITCT, and SPARCS).
   b. Congregate care settings with a longer length of stay might consider approaches that have demonstrated effectiveness in more restrictive settings

Table 1
Complex trauma interventions for children and adolescents: implementation information and impact on youth and family outcomes

Intervention	Age Range (Years)	Intended Delivery Methods	Settings	Outcomes Examined
Attachment, Regulation and Competence (ARC)[16,19,20]	3–22	Individual Family Group Systems level application Foster parent workshop	Outpatient Community-based Congregate care Schools	Posttraumatic stress Internalizing and externalizing problems Social, emotional, and behavioral functioning Caregiver stress Placement permanency Fewer restraints in congregate care settings
Child Parent Psychotherapy (CPP)[21–26]	0–6	Caregiver and child therapy	Outpatient Community-based	Posttraumatic stress Depression Behavioral problems Caregiver PTSD, depression, and avoidance Secure attachment Positive peer relationships
Integrative Treatment of Complex Trauma (ITCT) for Children and Adolescents[27,28]	5–21	Individual Family Group	Outpatient School Inpatient Congregate care	Posttraumatic stress Depression, anxiety Dissociation Anger Sexual concerns
Trauma Affect Regulation: Guide for Education and Therapy (TARGET)[29–32]	11+	Individual Family Group	Juvenile justice	Posttraumatic stress Depression and anxiety Emotion regulation Self-efficacy, hope, and coping Fewer sanctions in JJ settings
Trauma Focused Cognitive Behavioral Therapy (TF-CBT)[18,33–37]	3–18	Individual Family	Outpatient Community-based Congregate care Foster care	Posttraumatic stress Depression, anxiety Behavioral problems Adaptive functioning Caregiver posttraumatic stress Child–parent relationships

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Table 1
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Intervention	Age Range (Years)	Intended Delivery Methods	Settings	Outcomes Examined
Trauma Systems Therapy (TST)[38–42]	3–18	Individual Family Group Systems level application	Outpatient Community-based Schools Congregate care Foster care and child welfare	Posttraumatic stress Aggression Emotion regulation Functional outcomes Treatment retention Placement stability Fewer restraints in congregate care settings
Real Life Heroes (RLH): Resiliency-Focused Therapy for Complex Trauma[43–45]	6–18	Individual Family Group	Community-based Congregate care	Posttraumatic stress Internalizing and externalizing problems Anger Increased attachment security
Sensory Motor Arousal Regulation Treatment (SMART)[46,47]	2–21	Individual Family	Outpatient Congregate care	Internalizing problems Somatic complaints
Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS)[48,49]	12–21	Group	Outpatient Schools Congregate care Foster care Juvenile justice	Posttraumatic stress General functioning
Strengthening Family Coping Resources (SFCR)[50–52]	0–18	Group Family	Outpatient Community-based	Posttraumatic stress Behavior problems Caregiver posttraumatic stress Caregiver parenting stress

Date from Note: More detailed information regarding the above interventions can be accessed through the National Child Traumatic Stress Network's Interventions page (https://www.nctsn.org/treatments-and-practices/trauma-treatments/interventions).

(eg, ARC, SPARCS, TF-CBT, RLH, ITCT, and TST) and/or that are designed specifically to be used systemically to guide program policies, practices, and staff training in use of trauma-informed approaches in the day-to-day support of clients (eg, ARC and TST).

c. Two approaches, TARGET and SPARCS, have been designed for and demonstrated effectiveness for juvenile justice settings and populations, including impact on outcomes specific to JJ settings such as reduced sanctions.
d. Almost all of the interventions reviewed have included children and families with child welfare involvement in their studies of effectiveness and could be applied with this population given the crosscutting focus on building relational safety. In particular, ARC and TST have demonstrated a positive impact on placement stability and/or permanency, which is particularly relevant for child welfare populations. In addition, approaches that have a heavy emphasis on caregiver skills and support, resulting in improved caregiver outcomes (eg, ARC, SFCR, TF-CBT, and CPP) are well suited for caregiver-focused intervention and/or training within a child welfare context.

3. *Implementation approach:* Interventions are available that can be delivered in a range of formats including individual, family, and group therapy, groups or workshops for parents/caregivers, and dyadic (eg, caregiver and child conjoint sessions).

Biological interventions for complex trauma

The overall role of psychopharmacology in complex trauma is limited by a lack of supportive evidence. The Food and Drug Administration has not approved any medications for the treatment of complex trauma in children and adolescents. There is ongoing research assessing the safety and efficacy, as well as supporting the current use, of psychopharmacological interventions for comorbid diagnoses and specific symptoms of trauma, for example, treating nightmares with prazosin.[53] Psychopharmacological treatment is not endorsed for core symptoms of reactive attachment disorder or disinhibited disengagement disorder,[54] which are disorganized attachment styles that can be comorbid with complex trauma (see **Boxes 1** and **2**). Furthermore, a low sense of psychological safety and a lack of interpersonal trust are not considered targets of psychopharmacology. Biological interventions for complex trauma go beyond psychopharmacology to include other interventions that influence adaptive neuroplasticity in the central nervous system (CNS) and target the effects of trauma on the peripheral nervous system (PNS).

Psychopharmacological interventions primarily target neurotransmission; however, neuroanatomical changes occur in infants, children, and youth who experience traumatic stress.[55,56] These changes in brain structure and connectivity are thought to explain some of the symptomatology of complex trauma.[57] Interventions like neurofeedback,[58,59] and creative arts therapies such as art therapy[60,61] and music therapy,[62] are theorized to have positive effects on neuroplasticity.[63] These interventions target brain areas that are affected by trauma and have been used in children and adolescents with complex trauma.[64,65] By influencing neuroplasticity, the hope is that these interventions would carry the potential for long-term therapeutic benefit.

Brain-derived neurotrophic factor (BDNF) is thought to regulate neuroplasticity.[66] A meta-analysis found different levels of BDNF in subjects with PTSD compared to controls, concluding that PTSD is a "neuroplastic disorder."[67] Some medications are thought to have effects on BDNF and to potentially promote neuroplasticity; however, this has been primarily studied for the treatment of depression. Further research is

needed to understand the role of psychopharmacology as an intervention that promotes neuroplasticity in complex trauma.

The PNS is a biological target for interventions in the treatment of complex trauma as part of the "bottom–up" approach to regulating the CNS. Interoception, a complex concept and ongoing area of research, facilitates how one "senses, interprets, and regulates signals from within" oneself.[68] It has been studied as a bridge between the PNS and CNS via bidirectional processing. Interoception is positively associated with emotion regulation[69]—an important symptom target in children and adolescents with complex trauma—though further research is needed. Interventions that improve interoception such as biofeedback[70] and mindfulness[71] may enhance the capacity to regulate biological responses to trauma experienced in body through this PNS–CNS connection and are worthwhile targets for further research.

Overall, when considering interventions to target the neurobiology of complex trauma in children and adolescents, clinicians need to know the evidence for and role of psychopharmacology, as well as establish clear expectations and measurable goals. Clinicians should also consider recommending nonpharmacological interventions that may promote adaptive neuroplasticity and interoception.

SUMMARY

Complex trauma encompasses both exposure to prolonged and repeated interpersonal trauma during vulnerable developmental stages and the resulting disruptions to development that set the stage for poor emotional, relational, and functional outcomes. DTD and C-PTSD provide diagnostic frameworks that accurately and concisely describe the key symptoms of complex trauma. A number of behavioral interventions are readily available that address core intervention targets for complex trauma. Although there are no approved medications for the treatment of complex trauma, some symptoms of complex trauma are mediated by neurobiological changes that can be targeted by pharmacologic and nonpharmacological interventions.

CLINICS CARE POINTS

- Complex trauma encompasses both exposure to repeated or prolonged interpersonal trauma and the resulting psychological sequelae that span relational, emotional, and behavioral domains. These core features of complex trauma may include, but also go beyond, the diagnosis of PTSD. Alternative conceptual frameworks such as C-PTSD and/or DTD provide a more comprehensive method to capture the clinical profiles of children and youth impacted by complex trauma.
- Trauma-informed care utilizing a phasic approach that addresses the primary domains of challenge, including developing secure attachment relationships, building regulation capacity (eg, physiologic, emotional, cognitive, and behavioral regulation), processing traumatic experience, and developmental competencies, strengths and resiliency factors, is critical in the treatment of complex trauma.
- Psychopharmacological interventions target comorbid diagnoses and specific symptoms of trauma such as nightmares, but do not treat complex trauma and disorganized attachment styles.
- Nonpharmacological interventions that target PNS regulation or promote interoception may be beneficial in the treatment of complex trauma.

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