**ORIGINAL ARTICLE**

# Why We Need a Developmentally Appropriate Trauma Diagnosis for Children: a 10-Year Update on Developmental Trauma Disorder

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## Abstract

Developmental Trauma Disorder (DTD) was proposed almost two decades ago as a psychiatric diagnosis for children who have been traumatically victimized and whose attachment bonding with primary caregivers has been compromised. DTD was designed to complement and extend post-traumatic stress disorder (PTSD) by addressing forms of trauma-related biopsychosocial dysregulation not included in PTSD, many of which are attributed to other psychiatric disorders. In the past decade, evidence from clinician surveys and research field trial studies has provided evidence of DTD's validity and potential clinical utility. The growing evidence base for DTD is summarized and clinical rationales for the proposed DTD symptoms are described. DTD shows promise as a developmentally-attuned traumatic stress diagnosis for traumatized children.

**Keywords** Attachment trauma · Victimization · Children · Complex posttraumatic stress disorder

Problems arising from abuse and neglect have been documented using a variety of research methodologies: retrospectively and prospectively; with children and adults abused as children; across economic, cultural and racial strata; in large national samples; and by multiple independent investigators using a variety of psychometric, experimental and biological assessment methods. The continued practice of applying multiple distinct co-morbid diagnoses to traumatized children defies the cardinal rule of parsimony, obscures etiological clarity, and runs the danger of relegating trauma-informed treatment to only one disorder (PTSD) that is experienced by only a small fraction of traumatized children who are in psychiatric treatment. … A diagnosis based upon the inter-related sequelae of childhood victimization could reduce diagnostic confusion and enhance outcomes by promoting a targeted treatment approach focused on post-traumatic biopsychosocial dysregulation. (D'Andrea et al., 2012, p. 197)

Diagnosis in children should clearly consider developmental psychopathology, attachment theory, neuropsychology and plasticity, as well as resiliency factors …

If the Editors of DSM-5 wanted only one trauma diagnosis then arguably it should have been developmental trauma disorder. …A developmental approach to understanding disorders of trauma would support the imperative notion that such a diagnosis is complicated, in that there are constant changes with the individual child/youth/adult. (Bremness & Polzin, 2014) (p. 142)

Almost 30 years ago, the need for a complex form of post-traumatic stress disorder in cases of "prolonged and repeated trauma" was first formally articulated (Herman, 1992) and then empirically validated under the rubric of Disorders of Extreme Stress Not Otherwise Specified (DESNOS) (van der Kolk et al., 2005). A decade later, a developmentally-attuned form of complex PTSD for children was formally proposed: Developmental Trauma Disorder (DTD) (van der Kolk, 2005), based on the empirical evidence that traumatic victimization and attachment disruption in childhood leads to neurobiological, affective, behavioral, information processing, and relational adaptations that constitute symptoms best understood as forms of biopsychosocial dysregulation (Ford, 2005). In the next decade, rapidly accumulating research on the complexity of children's post-traumatic adaptations in biology, affect, information processing, behavior, and relationships provided strong indirect support for a diagnosis such as DTD that accounts for the trauma-related biopsychosocial dysregulation (D'Andrea et al., 2012).

However, neither DESNOS nor DTD were included as a psychiatric diagnosis in the 2013 *DSM*-5 (American
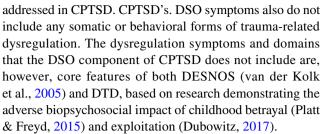
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Psychiatric Association, 2013; Friedman, 2013), nor subsequently in the 2019 *ICD*-11 (Cloitre et al., 2013; Maercker et al., 2013). The *DSM-5* Trauma and Stressor-Related Disorders review committee did not recommend DTD's inclusion due to the absence of validation data specifically for the proposed diagnosis, and this provided an impetus for the research over the next decade described in this paper. The *ICD*—11 review committee elected to evaluate (and ultimately to include) an adult version of complex PTSD based on validation research with the International Trauma Questionnaire (Brewin et al., 2017; Hyland et al., 2017). Both diagnostic systems substantially broadened the range of symptoms in posttraumatic stress disorder (PTSD), largely based on adding symptoms that reflected precisely the types of dysregulation described in DESNOS and DTD. The *DSM*-5 incorporated symptoms involving trauma-infused core beliefs (e.g., self-blame, distrust in relationships, anticipation of uncontrollable threats), distress-related emotions (e.g., anger, guilt, shame, grief), and behavior (e.g., aggression, recklessness, self-harm), as well as a sub-type defined by the presence of dissociation (i.e., depersonalization or derealization). The *DSM*-5 also added modified PTSD criteria for children 6 years and younger, by expanding the intrusive re-experiencing symptoms to include behavioral reenactments of traumatic events, nightmares whose content does not exactly recapitulate traumatic events, and temper tantrums, as well as combining the avoidance and negative cognitions/emotions symptoms into a single briefer set. However, the new and developmentally adapted PTSD symptoms represent only a partial sub-set of the types of biopsychosocial dysregulation postulated by DESNOS and DTD.

The *ICD*-11 actually reduced the number of PTSD symptoms from 17 in the *DSM*-IV (American Psychiatric Association, 2000) to six, but also added six new symptoms for complex PTSD (CPTSD). The six new symptoms in CPTSD are organized in three categories within a domain defined as Disturbances in Self Organization (DSO): (1) emotion dysregulation, (2) altered self-perceptions, (3) altered engagement in relationships. The DSO symptoms were intentionally limited to include the fewest possible core indicators for each category (Brewin et al., 2017). CPTSD's emotion dysregulation symptoms are difficulty in self-calming when upset and feeling emotionally numb or shut-down, but do not include extreme emotional lability and dissociative reactions to emotional distress Viewing oneself as failure or worthless are the CPTSD altered self-perception symptoms, but CPTSD does not include the more trauma-specific self-perception of being irreparably damaged by trauma. Feeling emotionally distant or detached from others are CPTSD's altered relationship symptoms, but feeling betrayed, insecure, coerced, exploited, needy, or emotionally over-involved, or reacting aggressively in relationships, are not addressed in CPTSD. CPTSD's. DSO symptoms also do not include any somatic or behavioral forms of trauma-related dysregulation. The dysregulation symptoms and domains that the DSO component of CPTSD does not include are, however, core features of both DESNOS (van der Kolk et al., 2005) and DTD, based on research demonstrating the adverse biopsychosocial impact of childhood betrayal (Platt & Freyd, 2015) and exploitation (Dubowitz, 2017).

As a result of these omissions in CPTSD, clinicians have called for diagnoses such as DESNOS or DTD in order to increase the accuracy of the diagnosis of traumatized children while also reducing unnecessary poly-diagnosis, poly-pharmacy, and excessively lengthy, costly, fragmented, stigmatizing, and often ineffective therapeutic services (Metzner et al., 2019; Rahim, 2014; Schmid et al., 2013; van der Kolk, 2005). However, caution is needed when contemplating adding a new diagnosis. Every addition diagnosis increases the risk of over-diagnosis due to "diagnosis creep" (Moynihan, 2016). Also, categorical diagnoses may be less useful than psychopathology dimensions when clinicians formulate treatment plans (Conway et al., 2018; Fusar-Poli et al., 2019). Based on these cautionary notes and research on the complex sequelae of traumatic victimization in children, D'Andrea et al. (2012) proposed:

> … the development of a construct, *developmental post-traumatic adaptation* … based on … symptoms that cause impairment … that could serve as the basis for a diagnosis – if biological, psychometric, or nosological research support specific cutoffs for a categorical distinction between clinically significant symptoms and normative (even if elevated) levels of posttraumatic [self-regulation]" (p. 197).

Therefore, DTD was developed, and has been subsequently refined and tested, precisely to achieve this goal, i.e., to provide a set of specific measurable symptoms that (1) operationalize posttraumatic developmental adaptations and their component dimensions, (2) can be assessed with psychometrically validated measure(s), and (3) identify targets for therapeutic treatment of children that are directly relevant to real-world clinical practice. This paper therefore will describe how DTD has been defined and empirically validated, and how the symptoms of DTD can provide child-serving clinicians with clinically significant and useful information.

## Criteria for Developmental Trauma Disorder

Children's adaptations during and after experiencing traumatic victimization involve a variety of changes in their core biopsychosocial self-regulation that can become forms of chronic dysregulation (McLaughlin & Lambert, 2017).

Although often referred to as complex trauma (Cook et al., 2005; Courtois, 2008), the term, developmental trauma, was chosen to describe the traumatic antecedents of these alterations in self-regulation in childhood in order to call attention to the impact of those alterations on child development. In order to translate this knowledge into clinical practice, DTD was designed with a structure similar to that of PTSD, beginning with a stressor criterion and followed by symptom criteria that represent the domains of biopsychosocial dysregulation. Criterion A in PTSD involves "exposure to actual or threatened death, serious injury, or sexual violation" (American Psychiatric Association, 2013, p. 280). In contrast, DTD's Criterion A involves exposure to: (1) repeated and severe episodes of traumatic *interpersonal victimization,* directly or as a witness, as well as **(2)** traumatic *disruption of protective caregiving* due to primary caregiver changes, separation, or impairment, or emotional abuse. Victimization in childhood often, but not always, involves attachment disruption (e.g., abuse by a primary caregiver) or occurs concurrently or sequentially with attachment disruption (e.g., family or community violence co-occurring with experiencing an impaired caregiver). The combination

of victimization and attachment disruption in either form has been shown empirically to have a particularly severe adverse impact on children's functioning and self-regulation (D'Andrea et al., 2012), and therefore the stressor criterion for DTD was defined as requiring a history of both traumatic *victimization* and disruption of primary caregiver *attachment*.

DTD symptoms were organized in three domains of biopsychosocial dysregulation (see Table 1). The DTD domain of *affective/somatic dysregulation* (Criterion B) includes four symptoms that are based on research showing that maladaptive emotion processing and emotion dysregulation are a link between childhood adversity and subsequent psychopathology extending into adolescence and adulthood (Aldao et al., 2016; Beauchaine & Cicchetti, 2019; Conway et al., 2018; Heleniak et al., 2016b; McLaughlin et al., 2020; Schaefer et al., 2021; Weissman et al., 2019). Somatic dysregulation (i.e., impairment in or pain related to basic bodily functions) was included in this domain based on to evidence that children may express emotional distress indirectly through somatic complaints and somatoform symptoms (Agnafors et al., 2019; Flaherty
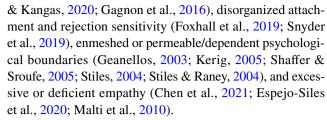
**Table 1** Developmental Trauma Disorder (DTD) Criteria

• Criterion A: lifetime exposure to two 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: Non-suicidal 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- 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 D2.a. parentified attempts to protect caregivers; or D2.b. difficulty engaging emotionally with primary caregiver(s) following separation)

◦ D3: Betrayal-based beliefs about relationships (either D3.a. expectation of betrayal in relationships; or D3.b. oppositional-defiance based on expecting to be coerced or exploited in relationships)

◦ D4: Reactive verbal or physical aggression (including proactive aggression intended to prevent/respond to harm/injury)

◦ D5: Impaired psychological boundaries (either D.5a. promiscuous enmeshment–seeking physical or emotional intimacy from any available source; or D5.b. 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

et al., 2013; Ford et al., 2013b; Vernberg et al., 2011). In addition, adults (Eslami et al., 2019; Littleton, 2015; Paras et al., 2009) and adolescents (Bonvanie et al., 2015; Espejo-Siles et al., 2020; Nixon et al., 2011; Rey et al., 2020) with a history of childhood sexual abuse or peer victimization are at risk for stress-related somatic complaints and bodily problems (i.e., functional gastrointestinal disorders, chronic nonspecific and pelvic pain, psychogenic seizures). Dissociation, which may occur either as psychological (e.g., depersonalization, derealization, alter personality states) or somatoform (e.g., unexplained paralysis or sensory experiences) symptoms, also was included in the DTD affect/somatic dysregulation domain, based on evidence that severe emotion dysregulation (e.g., alexithymia; impaired modulation of and recovery from extreme negative emotion states) is related to pathological dissociation in childhood (Hebert et al., 2020) and adulthood (Ford & Gomez, 2015; Powers et al., 2015; Van Dijke et al., 2010).

The second DTD domain, *cognitive/behavioral dysregulation* (Criterion C), includes five symptoms reflective of impaired information processing (i.e., attention, memory, problem solving) and related problems with behavioral activation and self-control (e.g., impulsivity, reckless or confrontational acts, self-harm, inability to initiate or complete goal directed-behavior). Children and adolescents who experience abuse or other forms of traumatic victimization, and adults with histories of childhood victimization, have been shown to exhibit either (or both) a cognitive/ attentional preoccupation with, or avoidance of, awareness of potential threats (Bardeen et al., 2020; McLaughlin et al., 2020; Terpou et al., 2019; Weissman et al., 2020b). Consistent with this cognitive bias, traumatically victimized or neglected children and youth also often experience impairment in executive functions and effortful control that can lead to behavioral disinhibition and impulsivity (e.g., reckless, self-harming, or dysfunctional self-soothing behavior) or difficulty initiating and completing normative goal-directed behavior (e.g., academic problems or failure, isolation or rejection in peer relationships) (Beauchaine & Cicchetti, 2019; El-Sheikh et al., 2009; Hankin et al., 2017; Huang-Pollock et al., 2017; Oshri et al., 2018; Santens et al., 2020; Snyder et al., 2019; Wade et al., 2020; Zhu et al., 2016).

The third DTD domain, *self and interpersonal dysregulation* (Criterion D), has six symptoms that represent problems with self-concept and in relationships. Severe self-ideal discrepancies (Mason et al., 2019; Schweizer et al., 2020), and associated alterations in brain network connectivity (Lanius et al., 2020), are operationalized as a view of oneself as irreparably damaged and defective (Herman, 1992). Dysregulation in relationships takes several forms, including avoidant and aggressive modes of relational engagement and social information processing (McLaughlin et al., 2020; Schweizer et al., 2020), expectancy of betrayal (Choi

& Kangas, 2020; Gagnon et al., 2016), disorganized attachment and rejection sensitivity (Foxhall et al., 2019; Snyder et al., 2019), enmeshed or permeable/dependent psychological boundaries (Geanellos, 2003; Kerig, 2005; Shaffer & Sroufe, 2005; Stiles, 2004; Stiles & Raney, 2004), and excessive or deficient empathy (Chen et al., 2021; Espejo-Siles et al., 2020; Malti et al., 2010).

The diverse domains and indicators of biopsychosocial dysregulation included in DTD extend well beyond the symptoms of PTSD, overlapping with symptoms of several internalizing, externalizing, and severe emotional disturbance disorders of childhood and adolescence (Afzali et al., 2018; Vine et al., 2020). As such, DTD might be better operationalized as transdiagnostic dimensions rather than as a categorical diagnosis (Conway et al., 2018; Heleniak et al., 2016a; Weissman et al., 2020a). Therefore, whether DTD's constituent symptoms can be meaningfully and validly subsumed within a single categorical syndrome and diagnosis was the question that led to the next phase of DTD's evolution: a series of empirical research studies.

## Empirical Evidence: The DTD Clinician Surveys and Field Trial Study

In order to move from indirect evidence to a direct test of DTD as a clinical construct and potential diagnosis, two surveys of clinicians (DePierro et al., 2019; Ford et al., 2013b) and a two-phase initial and replication field trial study (Ford et al. 2018; Ford et al., in review), have tested DTD's construct, convergent, and discriminant validity and clinical utility.

**Clinician Surveys** The first DTD survey was conducted via the internet with an international convenience sample of 472 self-selected medical, mental health, counseling, child welfare, and school professionals (Ford et al., 2013a). Respondents made quantitative ratings of the clinical significance of DTD developmental trauma exposure and symptom items, as well as PTSD and other childhood internalizing and externalizing disorder symptom items for four composite clinical cases. The case vignettes spanned a variety of age/developmental epochs, genders, race/ethnicities, cultures, trauma histories, and psychiatric comorbidities:

- a 15 year old Latina diagnosed with PTSD, Reactive Attachment Disorder (RAD), Dissociative Disorder Not Otherwise Specified (DDNOS), Intermittent Explosive Disorder (IED), and Bipolar Disorder (BPD);
- a 13 year old White girl diagnosed with BPD, RAD, IED, Attention Deficit Disorder Hyperactive subtype (ADHD), Oppositional Defiant Disorder (ODD), and Substance Use Disorder (SUD);

- an 11 year old African American boy diagnosed with RAD, Social Anxiety Disorder, Major Depressive Disorder/Dysthymic Disorder, Conduct Disorder, and SUD; and
- a 7 year old Asian-American boy diagnosed with an autism spectrum disorder, psychosis, and neurodevelopmental disorders.

For each case, respondents rated the clinical utility and significance (on 9-point scales) of six types of traumatic adversity (e.g., experienced or witnessed violent assault; actual or threatened sexual violation; repeated separation from primary caregivers) and 33–36 symptoms relevant to that specific case. DTD and PTSD symptoms were included in each set of symptoms without labeling them in any way that might bias respondents' ratings. The definition of clinical utility was the usefulness of the symptom in clinical case formulation, treatment planning, and professional communications regarding the child described in the vignette. Clinical significance was defined as the extent to which improvement in this symptom reflects a meaningful change based on the description of the child's problems. Symptoms were described behaviorally without referring to any specific diagnosis (including DTD). Respondents also rated the discriminability of the DTD symptoms from those of PTSD, anxiety, affective, and externalizing disorders, and the likely effectiveness of existing evidence-based pharmacotherapies or psychotherapies for those four classes of children's psychiatric disorders in remediating each of the DTD symptoms.

Survey results demonstrated that across the range of children and clinical features of the case vignettes, there was a clear consensus of child-serving clinicians that the proposed DTD symptoms were comparable in clinical utility and significance to the symptoms of PTSD and of each other relevant psychiatric disorder (Ford et al., 2013a). Although, as expected, many DTD symptoms were rated as overlapping with symptoms of PTSD and other child psychiatric disorders, all of the DTD symptoms were rated as at least moderately distinct from and not accounted for by PTSD or any other psychiatric disorder. Finally, the DTD symptoms were consistently rated by clinicians as being refractory to existing evidence-based psychotherapy and psychopharmacological treatments for PTSD and internalizing and externalizing disorders. Thus, the international cohort of child-serving clinicians viewed DTD symptoms as clinically useful and significant, distinct from other disorders' symptoms, and not effectively treated by the gold standard therapeutic interventions for PTSD or any other psychiatric disorder of childhood.

The second survey (DePierro et al., 2019) enrolled outpatient psychotherapists from North America who anonymously provided de-identified information about up to five actual child or adolescent clients ($N=210$ complete cases) using a structured internet questionnaire. The clients ranged from age 2–21 years old; 60% were female, 52% minority race/ethnicity, with on average 3.6 types of past traumatic experiences (e.g., neglect, physical or emotional abuse). Based on the reported symptoms, 60% met criteria for both DTD and PTSD, 10% for DTD but not PTSD, and 20% for PTSD but not DTD (10% did not meet criteria for either PTSD or DTD). Children/youth with comorbid PTSD + DTD had the most extensive trauma histories, especially traumas involving family relationships (e.g., maltreatment, family violence), and those with only DTD similarly had extensive trauma histories. Children/youth with only PTSD had experienced fewer types of traumatic events. Children/youth with DTD (with or without PTSD) had the most severe impairment in six domains (i.e., school, peer relations, family, health, work, and legal), and the number of DTD symptoms had twice as strong an association with impairment that for PTSD symptoms. Thus, when clinicians described actual child/youth clients, DTD often co-occurred with PTSD, but children/youth meeting criteria for DTD had more extensive trauma histories and were more likely to be impaired than those who met criteria only for PTSD.

The two surveys' findings indicate that child-serving professionals view DTD and its symptoms as adding important clinical information beyond that provided by PTSD or other child psychiatric diagnoses. DTD symptoms were associated with more extensive trauma histories and functional impairment than PTSD symptoms, and were described as refractory to treatment by evidence-based psychotherapies and pharmacotherapies for other child psychiatric disorders. As a next step in evaluating DTD, the provisional set of DTD symptoms was reduced to a core set of fifteen symptoms and a semi-structured interview (the DTD-SI) was developed to assess DTD with either the child or an adult primary caregiver as the respondent (Ford & Spinazzola, 2011).
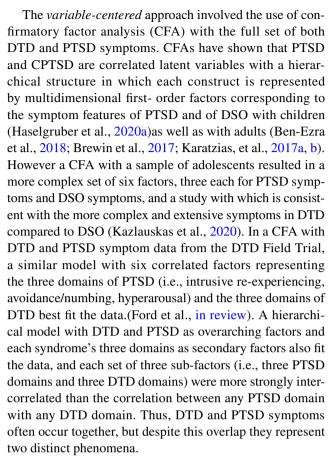
**The DTD Field Trial** In eight sites spanning urban, suburban, and rural areas across the United States, more than 500 children and adolescents and an adult parent/caregiver were enrolled in an interview study conducted in two independent phases ($N=236$; $N=271$). The participating children/youths had a range of trauma histories (from none to polyvictimization) either in pediatric care (approximately 5%), or outpatient (approximately 60%) or residential (approximately 35%) mental health treatment. Each youth was assessed either by being interviewed directly or by an interview with a parent/guardian (or both conjointly).The DTD-SI semi-structured interview for DTD was refined by a team of child traumatic stress experts through an iterative Delphi process, resulting in a penultimate version that was used in the first phase of the field trial (Ford et al., 2018). Based on findings from the DTD Field Trial's first phase, a final version of

the DTD Semi-structured Interview (version 10.7; available from www.complextrauma.org) was administered to children and/or a parent or adult guardian in the second phase of the DTD Field Trial (Ford et al., in review).

Across the two phases of the DTD Field Trial, DTD and PTSD were shown to frequently co-occur but to have unique as well as shared traumatic antecedents and comorbidities. DTD and PTSD both were associated with polyvictimization, but only DTD was consistently and uniquely associated with victimization trauma (i.e., emotional abuse, family violence) and attachment trauma (i.e., separation from caregiver; caregiver impairment)–while PTSD was associated with physical abuse/assault, sexual trauma, and non-interpersonal trauma (e.g., life-threatening accidents or disasters) (Spinazzola et al., 2018, 2021). DTD also was associated with a more complex pattern of comorbidity than PTSD, including both internalizing (e.g., separation anxiety, panic) and externalizing (e.g., attention deficit hyperactivity disorder, oppositional defiant disorder) disorders (Ford et al., 2021; van der Kolk et al., 2019). Although DTD and PTSD often were present in combination, each syndrome occurred separately from the other in 15–20% of the field trial samples (Ford et al., 2018, 2021; Ford et al., in review; van der Kolk et al., 2019).

**Construct Validity Analyses** Additional psychometric validation of the DTD construct were conducted with the full two-phase ($N = 507$) DTD Field Trial dataset. Four complementary approaches to data analysis: variable-centered, person-centered, network/machine learning, and structural equation modeling. Variable-centered analyses provide a test of the internal structure of a construct, potentially confirming or suggesting the need for revisions in the three-domain structure postulated for DTD. Person-centered analyses identify sub-groups of individuals who have distinct profiles of symptoms, potentially revealing sub-types of DTD (with or without comorbid PTSD symptoms) and whether DTD and PTSD symptoms tend to co-occur for some children/youth (as opposed to occurring independently in different sub-groups). Network analyses examine the connections between symptoms and symptom clusters within DTD and across a range of diagnoses including PTSD and other childhood internalizing and externalizing disorders, demonstrating DTD symptom's position within the larger universe of all childhood psychiatric disorders. Finally, structural equation modeling analyses test the place the DTD and PTSD constructs within that larger universe of childhood psychiatric disorders, potentially demonstrating whether DTD falls within one of the in the transdiagnostic spectra (e.g., disorders of fear, distress, externalizing behavior, or thought disorders) or represents a unique domain.

The *variable-centered* approach involved the use of confirmatory factor analysis (CFA) with the full set of both DTD and PTSD symptoms. CFAs have shown that PTSD and CPTSD are correlated latent variables with a hierarchical structure in which each construct is represented by multidimensional first- order factors corresponding to the symptom features of PTSD and of DSO with children (Haselgruber et al., 2020a)as well as with adults (Ben-Ezra et al., 2018; Brewin et al., 2017; Karatzias, et al., 2017a, b). However a CFA with a sample of adolescents resulted in a more complex set of six factors, three each for PTSD symptoms and DSO symptoms, and a study with which is consistent with the more complex and extensive symptoms in DTD compared to DSO (Kazlauskas et al., 2020). In a CFA with DTD and PTSD symptom data from the DTD Field Trial, a similar model with six correlated factors representing the three domains of PTSD (i.e., intrusive re-experiencing, avoidance/numbing, hyperarousal) and the three domains of DTD best fit the data.(Ford et al., in review). A hierarchical model with DTD and PTSD as overarching factors and each syndrome's three domains as secondary factors also fit the data, and each set of three sub-factors (i.e., three PTSD domains and three DTD domains) were more strongly intercorrelated than the correlation between any PTSD domain with any DTD domain. Thus, DTD and PTSD symptoms often occur together, but despite this overlap they represent two distinct phenomena.

The *person-centered* approach to the validation of DTD was done using latent class analysis (LCA) to empirically determine whether there are distinct sub-groups of children with DTD and PTSD (or both) symptoms (Ford et al., in review). Prior studies had found evidence of distinct subgroups characterized primarily by either PTSD or DSO symptoms, and a third sub-group whose members had both disorders' symptoms, in samples of adults (Cloitre et al., 2013, 2019; Hyland et al., 2020; Karatzias, et al., 2017a, b; Knefel & Lueger-Schuster, 2013) and children (Haselgruber et al., 2020b; Perkonigg et al., 2016). In the DTD Field Trial study sample there were indeed distinct sub-groups of children based on profiles of DTD and PTSD symptoms, including classes that were predominantly characterized by either DTD (pDTD) or PTSD (pPTSD) symptoms and a combined DTD + PTSD class (DTD + PTSD) (Ford et al., in review). DTD + PTSD children were distinguished from pDTD and pPTSD children by an especially high likelihood of exposure to one type of victimization trauma (i.e., emotional abuse) and one type of attachment trauma (i.e., neglect). However, DTD + PTSD children were not more likely than pDTD or pPTSD children to have experienced some other forms of victimization trauma (i.e., family or community violence) or attachment trauma (i.e., impairment of or separation from caregivers).

DTD + PTSD class members also had more comorbid internalizing and externalizing disorders than pDTD or pPTSD class members. Although the DTD + PTSD class had the most substantial comorbidity and highest levels of PTSD symptoms, the existence of distinct pDTD and pPTSD classes suggests that DTD can be distinguished from PTSD by more than simply severe psychopathology (Wolf et al., 2015). This is consistent with findings from studies with adults (Brewin et al., 2017) and adolescents (Kazlauskas et al., 2020) showing that distinct sub-groups of adults can be identified based on PTSD symptoms alone, DSO symptoms alone, or a combination of PTSD and DSO symptoms, There may be a continuum of PTSD severity, ranging from the minimal symptoms class to the pPTSD class to the DTD + PTSD class, similar to findings with the *ICD*-11 CPTSD framework and high risk children who were in foster care (Haselgruber et al., 2020b), receiving trauma-focused cognitive behavior therapy (Sachser et al., 2017), or exposed to mass violence (Crum et al., 2018). This also is similar to findings with trauma-exposed adults suggesting that PTSD, CPTSD, and Borderline Personality Disorder (BPD) may be on a continuum of severity (Ford & Courtois, 2021), and raises the question of whether (and for whom) DTD is a precursor to adult CPTSD or BPD.

However, the existence of a separate pDTD class indicates that DTD is not simply a severe form of PTSD, just as *ICD*-11 CPTSD has been found to be more than a severe form of PTSD in adults (Bottche et al., 2018; Brewin et al., 2017). pDTD children also had more extensive trauma histories than those with pPTSD and were often were diagnosed with an externalizing disorder (oppositional defiant disorder; ODD), consistent with prior DTD Field Trial findings that ODD was associated with DTD but not PTSD (Ford et al., 2021; van der Kolk et al., 2019), Traumatized children who do not meet criteria for PTSD thus may benefit from trauma-focused therapy if that therapy is adapted to address trauma history complexity and trauma-related symptoms that extend beyond PTSD (e.g., oppositional behavior).

The *network/machine learning* approach has revealed interrelationships between PTSD symptoms and a wide range of mental and behavioral health disorders in adults (Birkeland et al., 2020) and children (Saxe et al., 2016), including with complex PTSD symptoms (Gluck et al., 2017; Karatzias et al., 2020; Knefel et al., 2016; McElroy et al., 2019). When applied to the DTD Field Trial dataset, a network model was identified in which DTD was strongly connected to the diagnoses of PTSD and depression, and also to ODD (Knefel et al., in review). Neither PTSD nor depression were connected to ODD, and DTD was more strongly connected than PTSD to depression. DTD also was connected to both SAD and GAD, but not to diagnoses representing severe emotional disturbance (i.e., psychosis, mania, panic). When the three domains of DTD and the three

domains of PTSD were examined separately, the emotion/somatic (Criterion B) and attentional/behavioral (Criterion C) domains of DTD were the primary connections to ODD, and the self/relational (Criterion D) domain of DTD was the primary connection to depression and SAD and GAD. At the level of symptom sub-sets, the DTD and PTSD domains each had strong within-diagnosis connections (as did the externalizing, anxiety, and severe emotional disturbance disorders), but the DTD and PTSD domains were not connected. Thus, DTD and PTSD appear to be distinct, and DTD has unique connections to both externalizing and internalizing disorders.

From the *structural equation modeling* approach, psychopathology can be organized in several transdiagnostic dimensions that cut across categorical diagnoses and represent distinct domains of symptoms (Lynch et al., 2021; Ringwald et al., 2021). PTSD symptoms typically are located within an internalizing disorder dimension (along with anxiety disorders and depression) because they primarily reflect emotional distress rather than the themes of other dimensions (e.g., externalizing disorders–behavior problems, or thought disorders–psychosis and mania) (Ringwald et al., 2021). However, a study with community and clinical samples of adults found that PTSD symptoms contributed not only to sub-dimensions within the internalizing disorders (i.e., distress and fear) but also to a thought disorder dimension (Forbes et al., 2021). Where children's PTSD symptoms should be placed in a transdiagnostic framework has not been tested, nor whether including DTD symptoms would change the dimensional structure or PTSD's place in it. Therefore, core symptoms of DTD, PTSD, and depressive, panic, phobic, generalized and separation anxiety, obsessive–compulsive, psychotic, and disruptive behavior (i.e., ADHD, ODD, CD) disorders were extracted from the DTD Field Trial dataset and empirically organized into dimensions using structural equation modeling (Hyland et al., in review).

In contrast to findings from previous studies including PTSD symptoms, the PTSD and DTD symptoms represented a separate trauma symptoms dimension rather than being included in an internalizing dimension (Hyland et al., in review). The DTD + PTSD trauma symptoms dimension was distinct from but related to one internalizing dimension representing distress (i.e., depression, worry, somatic problems, self-consciousness, and tension) but unrelated to an internalizing dimension representing fear. This finding is consistent with research with adults that placed trauma-related symptoms in a distress dimension and distinct from other internalizing symptoms (Hyland et al., 2020). Further, the trauma symptoms dimension also was distinct from but closely related to an externalizing dimension that included ADHD, ODD, and CD symptoms, but unrelated to a thought disorder

dimension. These findings differ from results with adults that linked PTSD symptoms with fear or thought disorder dimensions (Forbes et al., 2021), suggesting that, consistent with the DTD formulation, children's trauma-related symptoms may represent a distinct dimension that includes PTSD's trauma-specific symptoms but also DTD's symptoms of emotional and somatic distress with externalizing behavior problems.

**Summary** Converging evidence from the perspective of child-serving clinicians and from research assessments of children and adult caregivers with the DTD Semi-structured Interview indicate that DTD is a cohesive set of childhood symptoms that are distinct from PTSD (and often but not always co-occurring with PTSD symptoms). DTD's symptoms include forms of emotional, somatic, cognitive, behavioral, relational, and self/identity dysregulation that reflect problems with internalizing distress and externalizing disruptive behaviors, in contrast to the symptoms of PTSD which are more closely associated fear-related internalizing problems (e.g., phobias, panic) and thought disorders (e.g., flashbacks, paranoia). Like PTSD, DTD is associated with a history of exposure to psychological trauma, but differs from PTSD in being related to specifically to a combination of interpersonal (family and community) victimization and disrupted attachment bonding (e.g., traumatic separations and emotional abuse).

DTD thus might play a role similar to that of Disturbances of Self Organization symptoms in *ICD*-11 adult complex PTSD, serving as a complement for PTSD that enables clinicians to identify children and adolescents who have trauma-related symptoms that do not (or only partially) fit the criteria for PTSD and often are diagnosed and treated as other internalizing and externalizing disorders. In combination with PTSD, DTD also could provide the basis for a complex traumatic stress disorder of childhood and adolescence that parallels the adult complex PTSD diagnosis. The evidence of comorbidity of DTD with internalizing and externalizing disorders, also calls for research to determine whether (and for whom) DTD may serve as a primary diagnosis in lieu of or comorbidly with a range of other child psychiatric disorders.

Although DTD and PTSD are distinguishable based on symptoms, trauma antecedents, and comorbidities, they also share many trauma antecedents and comorbidities, and their symptoms often co-occur. While pure DTD (or PTSD) may occur for some traumatized children, for many there is a comingling of symptoms that represent parallel adaptations to exposure to psychological traumas. Thus, it is important to carefully consider how recognizing DTD adds value to psychological assessment and treatment beyond (or along with) addressing PTSD.

## Applications of the DTD Symptoms to Child and Adolescent Mental Health Treatment

Ultimately, the clinical utility of DTD will ride on whether including its symptoms can add value to mental health treatment for children and adolescents. Evidence-based treatments for pediatric PTSD, although varied in their specific formats and interventions, share a focus on helping children to gain a sense of mastery over trauma memories by intentionally recalling specific memories and confronting in vivo reminders of those memories rather than relying on hypervigilance and avoidance to cope with the memories and reminders (Ford, 2018; Ford et al., 2018). DTD's symptoms could extend or enhance the accessibility and effectiveness of existing trauma-focused psychotherapies in at least three ways. First, DTD's emotion/somatic dysregulation symptoms could identify children who do not meet criteria for PTSD but who have unrecognized trauma re-experiencing symptoms, and who would not otherwise be considered candidates for trauma-focused psychotherapy. Second, DTD's cognitive/attentional and behavioral symptoms may be signs that a child is using hypervigilance and avoidance in order to cope with the distress evoked by intrusive trauma memories even when the child and their adult caregivers (and their therapist) do not recognize the relationship between past traumatic exposure and the child's symptoms. In such cases, trauma-focused treatment could be combined assistance in developing adaptive skills for coping with trauma-related attentional and behavioral dysregulation. Third, the self and relational dysregulation symptoms may be clues that trauma-focused psychotherapy is indicated because a child is experiencing reenactments of the traumagenic dynamics of sexualization, betrayal, stigmatization, or powerlessness (Finkelhor & Browne, 1985). I will discuss each of these three ways in which DTD symptoms (Table 1) can guide clinicians in identifying and providing trauma-focused psychotherapy for a child who is experiencing trauma-related biopsychosocial dysregulation, whether or not the child meets criteria for a diagnosis of PTSD.

**Identifying Children with Unrecognized Intrusive Re-experiencing Symptoms** The DTD Criterion B emotion/somatic dysregulation symptoms represent difficulties in modulating affective or somatic distress: persistent overwhelming negative emotions (B1) or body states (B 2, e.g., somatic pain, tension, or hyper-activation) that are exacerbated by inability to recognize (B3) or verbally mediate (i.e., put into words; B4) emotions or body states. Although there are many possible causes of emotion and bodily dysregulation (e.g., neurophysiological imbalances, illness or injury; socioeconomic stressors; insufficient or aversive

social support), coping with traumatic victimization and persistent intrusive trauma memory re-experiencing creates an allostatic load—a depletion of the child's psychobiological capacities due to the effort required to cope with intrusive trauma memories (McEwen, 2017)–that can result in severe emotional and bodily dysregulation. Children (and their adult caregivers and clinicians) often experience emotion or bodily distress without being consciously aware of its link to traumatic victimization, especially when traumas occurred in a context of emotional and physical deprivation, i.e., insufficient care and protection by primary caregivers (Miller et al., 2018),

The combination of traumatic victimization and absent or insufficient care and protection are precisely the conditions hypothesized to be the origins of DTD. DTD's emotional and somatic dysregulation symptoms therefore can provide clinicians with a red flag signifying the need to assess whether a child's severe emotion or somatic distress is a manifestation of trauma-related dysregulation. If neither the child nor adult caregivers recognize the connection between past traumatic victimization and attachment disruption with the child's affective or somatic dysregulation, a clinician could not diagnose the child with PTSD and would not be able to recommend trauma-focused psychotherapy. In such cases, DTD emotion and somatic dysregulation symptoms would not automatically warrant the provision of trauma-focused psychotherapy. However, the presence of emotional or somatic dysregulation could open the door to a careful trauma history assessment and consideration of possible connections between the child's current dysregulation symptoms and the child's past adaptations to circumstances that may have involved traumatic victimization and disrupted attachment. Rather than simply treating the child for an affective or anxiety disorder, or for severe emotional disturbance (e.g., bipolar or obsessive–compulsive disorder), Criterion B DTD symptoms thus could provide a basis for trauma-focused psychotherapy that enables the child to modulate distressing emotions in adaptive ways that were not available to the child in the context of past traumatic victimization (e.g., emotion recognition, expression, processing, and acceptance) (Ford, 2017).

**Identifying Subtle Forms of Children's Trauma-related Coping** Children exposed to victimization and attachment disruption adapt neurobiologically by drawing on the body's innate stress responses, including the freeze (i.e., hypervigilance), fight (i.e., hyperarousal), flight (i.e., avoidance), and tonic immobility (i.e., dissociation) responses.(Bracha & Maser, 2008; Marx et al., 2008). What begins as survival coping in acute context of traumatic victimization (Ford, 2020) can become chronic maladaptive form of these stress reactions that are interwoven with the child's personality and psychological development. As a result, the child is coping

with an internalized sense of threat and vulnerability that paradoxically is exacerbated rather than ameliorated by the very stress reactions that the child has come to rely upon as a means of reducing the traumagenic sense of being helpless, unprotected, and emotionally overwhelmed. In addition, coping based upon the primitive stress responses becomes increasingly maladaptive over time because of the allostatic (McEwen, 2017) depletion of psychological and physical resources that is the cost of remaining in a state of ongoing distress and stress reactivity.

Considered in this context, DTD's attentional/cognitive and behavioral dysregulation symptoms can be understood as forms of the classic stress response that originated in a context of traumatic victimization and insufficient care and protection. Extreme vigilance (C1) aimed at either recognizing threats (or paradoxically, avoiding awareness of threats in order to not become emotionally overwhelmed by fear, helplessness, or vulnerability) is a variant of the freeze phase of the stress response that is adaptive defense if a child is being victimized, but emotionally, cognitively, and physically exhausting to sustain over time. Reckless or confrontational behavior (C2) is a variant of the fight phase of the stress response that can increase the child's sense of agency and control despite resulting in further victimization when continued over time. Primitive self-soothing (C3) and self-harming (C4) behaviors are variants of the flight phase of the stress response that can provide temporary distraction, detachment, or analgesia–but with increased vulnerability to further victimization or to self-injury as the cost. Finally, problems initiating or completing goal-directed actions (C5) are a variant of the tonic immobility phase of the stress response, especially when the difficulties are due in some part to dissociative reactions involving severe disorientation (e.g., fugue states, derealization) or self-fragmentation.
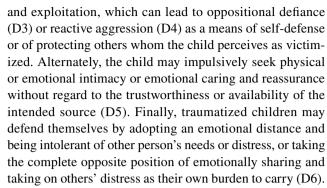
Children who are experiencing severe attentional and behavioral problems tend to be diagnosed with externalizing or neurodevelopmental disorders or severe emotional disturbance. Non-trauma-focused therapeutic interventions designed to enable children to manage and reduce internalized distress and manage disruptive behavior (e.g., cognitive-behavioral therapies; parent behavior management therapies; mindfulness/ acceptance-based stress reduction; supportive or psychodynamic psychotherapy) may be helpful for some of these children. However, children who do not have a favorable response to evidence-based therapies for externalizing disorders (Wergeland et al., 2020), neurodevelopmental disorders (Medavarapu et al., 2019), or serious emotional disturbance (Dvir et al., 2014; Zima, 2021), may benefit from adaptations of trauma-focused psychotherapy that are designed to address complex forms of attentional and behavioral dysregulation (Peterson et al., 2019; Stack & Lucyshyn, 2019). DTD can serve as the basis for conducting

an assessment of whether attentional or behavioral dysregulation represents trauma-related coping, and if so to recommend provision of trauma-focused psychotherapy whether or not the child meets criteria for PTSD. In that assessment, a child's previously unrecognized or overlooked trauma history also may come to light, such that a diagnosis of PTSD may actually be warranted where previously it had been missed. This is consistent with DTD Field Trial study findings that DTD can occur independently of PTSD, but most often occurs in combination with PTSD. On the other hand, even if the child does not meet criteria for PTSD, DTD's link between a history of traumatic victimization and disrupted attachment with the symptoms of attentional and behavioral dysregulation can justify a trauma-focused approach to treating those symptoms.

**Identifying Children's Reenactments of Traumatic Victimization** Reenactments of traumatic experiences are a variant of PTSD's intrusive re-experiencing symptoms that occur most commonly in early childhood (Hagan et al., 2015, 2018) but also are observed in adolescence and adulthood (Musicaro et al., 2019; van der Kolk & van der Hart, 1989). In trauma reenactments, the child is largely or completely unaware of intrusive trauma memories but experiences DTD Criterion B symptoms (i.e., emotional and somatic dysregulation) and DTD Criterion C symptoms (i.e., extreme stress reactions in the form of attentional and behavioral dysregulation) which culminate in a reenactment of the traumagenic dynamics that occurred in past victimization and attachment traumas. DTD's Criterion D symptoms of self and relational dysregulation represent specific types of trauma reenactments that take the form of maladaptive changes in the child's sense of self and engagement in relationships.

Developmentally traumatized children often conclude that there is something fundamentally damaged about themselves (DTD symptom D1), because they do not understand why they were victimized in the past and why their every effort to feel better in the present–or at least to feel somewhat normal–only seems to make things worse (i.e., the maladaptive coping and escalating distress). Turning to their relationships for help, these children often feel a deep sense of insecurity based on doubts that their primary sources of protection and caring–their primary adult caregivers–can be relied upon to actually provide the needed protection and caring. Trauma-related attachment insecurity is reenacted in two essential forms, either as an aversion to emotional closeness when separated (even briefly) from primary caregivers, or as a role reversal in which the child attempts to regain a sense of emotional security by serving as the parentified caregiver from their own adult caregiver (D2). Alternately, a developmentally traumatized child may perceive close relationships as always leading to betrayal (D3), or to coercion

and exploitation, which can lead to oppositional defiance (D3) or reactive aggression (D4) as a means of self-defense or of protecting others whom the child perceives as victimized. Alternately, the child may impulsively seek physical or emotional intimacy or emotional caring and reassurance without regard to the trustworthiness or availability of the intended source (D5). Finally, traumatized children may defend themselves by adopting an emotional distance and being intolerant of other person's needs or distress, or taking the complete opposite position of emotionally sharing and taking on others' distress as their own burden to carry (D6).

Although these self and dysregulation symptoms are not necessarily trauma-related, the possibility that they represent posttraumatic reenactments provides a basis for a trauma history assessment. If a link between traumatic victimization and attachment disruptions with the self or relational dysregulation is established, this can justify (and guide) the provision of trauma-focused psychotherapies designed to enable children and adult caregivers to therapeutically process trauma reenactments while also accessing or developing adaptive forms of self-regulation and safe and supportive relationships (Ford & Courtois, 2013). Thus, DTD's Criterion D symptoms can provide a guide to understanding trauma-related reenactments and a set of specific targets for processing trauma memories when those memories are not consciously re-experienced but instead are reenacted in the form of self or relational dysregulation.

**Facilitating Caregiver Involvement and Other Systemic Interventions** Primary caregivers play an important role in trauma-focused psychotherapy for children and adolescents, and this may be especially important for children with DTD in order to repair the adverse impact of disruptions in their attachment with primary caregivers. Trauma-focused treatment also may be indicated in school or other settings (e.g., residential or juvenile justice placements), and the DTD diagnosis can alert providers in those settings to the importance of addressing not only the impact of victimization (and non-interpersonal) traumas but also the difficulties that children have in relationships with key adults (e.g., teachers, probation officers, foster parents) when they have experienced fundamental disruptions in attachment with primary caregivers.

## Conclusion

Developmental Trauma Disorder has garnered increasing empirical evidence as a clinical construct and as a diagnosis complementary to PTSD for children and adolescents who are experiencing biopsychosocial dysregulation and therefore could benefit from developmentally attuned trauma-focused psychotherapy whether or not they meet criteria for

a diagnosis of PTSD. DTD also provides additional therapeutic targets when clinicians conduct trauma-focused psychotherapy by identifying specific ways in which intrusive re-experiencing of unrecognized trauma memories occurs in the form of emotional/somatic, attentional/ behavioral, and self/ relational dysregulation. Traumatically victimized and insecurely attached children experience symptoms that may (or may not) include those of PTSD, but also this wider range of symptoms that should not simply be attributed to other psychiatric disorders. DTD provides a rational and empirically supported basis for clinicians to identify and therapeutically address those complex symptoms in an efficient, thorough, and developmentally- and trauma-informed manner.

The research to date, although encouraging, warrants several extensions in order to address several unanswered questions. Similar to the distinction between early childhood vs. adult PTSD symptom criteria, it will be important to determine whether DTD symptoms present differently depending upon a child/youth's age and developmental stage–and whether DTD symptoms in childhood persist, wane, or change as a child develops into adolescence and adulthood. This will provide opportunities for a much needed explicit intentional integration of developmental and attachment theory into the conceptualization and study of DTD. Gender differences in symptom presentation, course over time/development, and impact on functioning require careful investigation. Although the DTD symptoms were invariant across the race/ethnicity (i.e., White vs. Of Color) of children in the Field Trial studies, the credibility and appropriateness of the DTD symptoms as conceptualized and assessed for children/youth of different racial/ethnic, cultural, national, and socioeconomic backgrounds. The efficacy and effectiveness of varied individual, family/systemic, group, and other psychotherapy interventions for children/youth with DTD (and different profiles of DTD, PTSD, and other childhood psychiatric disorder symptoms and differing trauma and attachment histories also will be important to elucidate. These and other clinical and social-ecological questions will provide important additional guidance to inform the conceptualization and application of DTD.

## Declarations

**Conflict of Interest Disclosure** Julian Ford is a consultant to Advanced Trauma Solutions Professionals, Inc., the sole licensed distributor of the TARGET model copyrighted by the University of Connecticut.

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