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When Nowhere Is Safe: Interpersonal Trauma and Attachment Adversity as Antecedents of Posttraumatic Stress Disorder and Developmental Trauma Disorder

Joseph Spinazzola,[1] Bessel van der Kolk,[2,3] and Julian D. Ford[4]

[1]Foundation Trust, Melrose, Massachusetts, USA
[2]The Trauma Center, Brookline, Massachusetts
[3]Department of Psychiatry, Boston University School of Medicine, Boston, Massachusetts, USA
[4]Department of Psychiatry, University of Connecticut School of Medicine, Farmington, Connecticut, USA

Developmental trauma disorder (DTD) has been proposed as clinical framework for the sequelae of complex trauma exposure in children. In this study, we investigated whether DTD is associated with different traumatic antecedents than posttraumatic stress disorder (PTSD). In a multisite sample of 236 children referred from pediatric or mental health treatment, DTD was assessed using the DTD Structured Interview. Trauma history was assessed using the Traumatic Events Screening Instrument (TESI). On an unadjusted basis, both DTD, odds ratios (ORs) = 2.0–3.8, 95% CI [1.17, 7.19]; and PTSD, ORs = 1.8–3.0, 95% CI [1.04, 6.27], were associated with past physical assault and/or abuse, family violence, emotional abuse, neglect, and impaired caregivers; and DTD was associated community violence, OR = 2.7, 95% CI [1.35, 5.43]. On a multivariate basis after controlling for the effects of PTSD, DTD was associated with family and community violence and impaired caregivers, ORs = 2.0–2.5, 95% CI [1.09, 5.97], whereas PTSD was only associated with physical assault and/or abuse after controlling for the effects of DTD, OR = 2.4, 95% CI [1.07, 4.99]. Exposure to both interpersonal trauma and attachment adversity was associated with the highest DTD symptom count, controlling for the PTSD symptom count. Although childhood PTSD and DTD share several traumatic antecedents, DTD may be uniquely associated with pervasive exposure to violent environments and impaired caregiving. Therefore, DTD warrants further investigation as a framework for the assessment and treatment of children with histories of interpersonal victimization and attachment adversity.

Developmental trauma disorder (DTD) has been proposed as an integrative framework for assessing and treating children's emotional, biological, cognitive, behavioral, interper-

sonal, and self/identity dysregulation in the wake of traumatic victimization and disrupted attachment (D'Andrea, Ford, Stolbach, Spinazzola, & van der Kolk, 2012; Ford et al., 2013; van der Kolk, 2005). Intentional acts by other human beings that threaten the life or bodily integrity of children or their primary support systems and caregivers—interpersonal (Hagan, Hulette, & Lieberman, 2015) or complex (Wamser-Nanney & Vandenberg, 2013) trauma—have particularly severe and wide-ranging adverse effects on children's psychosocial functioning and neurodevelopment (D'Andrea et al., 2012). Early clinical observations (Pynoos, Steinberg, Ornitz, & Goenjian, 1997; Terr, 1991) and prospective studies (Briggs-Gowan et al., 2010; Briggs-Gowan, Carter, & Ford, 2012; Horan & Widom, 2014; Widom, Czaja, & Dutton, 2014; Wilson, Samuelson, Staudenmeyer, & Widom, 2015) that empirically identified exposure to violence and maltreatment as unique antecedents of severe psychobiological problems independent of sociodemographic risk factors (Kitzmann, Gaylord, Holt, & Kenny, 2003; Knickerbocker, Heyman, Slep, Jouriles, & McDonald, 2007) have demonstrated the unique adverse impact of early childhood exposure to interpersonal trauma on development and functioning across the lifespan.

When young children and their caregivers are exposed to interpersonal trauma, the children's development of attachment

bonds with primary caregivers can also be altered or disrupted (Berthelot et al., 2015; Herbers, Cutuli, Monn, Narayan, & Masten, 2014; Myers & Wells, 2015; Pat-Horenczyk et al., 2015; Pat-Horenczyk et al., 2017). The combination of interpersonal trauma and disruption of primary attachment has been shown to interfere with children's mastery of stage-salient tasks, including emotion regulation, autonomy, and acquisition of age-typical prosocial skills necessary for learning and functioning in activities and relationships crucial to psychosocial development (D'Andrea et al., 2012; Mongillo, Briggs-Gowan, Ford, & Carter, 2009; Pat-Horenczyk et al., 2015; Scheeringa, Zeanah, Myers, & Putnam, 2005).

Whether the complex and multisystem sequelae of exposure to interpersonal trauma and disrupted attachment with primary caregivers can be consolidated into a single developmental trauma syndrome has not been empirically established and is the subject of intense debate (Bryant, 2010; Ford, 2017; Goodman, 2012; Herman, 2012; Resick et al., 2012). Developmental trauma disorder was formulated as an integration of the diverse forms of affective, behavioral, cognitive, relational, somatic, and self/identity dysregulation related to children's exposure to interpersonal trauma in the context of disrupted or impaired attachment relationships with primary caregivers (D'Andrea et al., 2012). Results of an international survey of pediatric and behavioral health clinicians provided support for the clinical utility of the DTD syndrome (Ford et al., 2013). However, whether the forms of dysregulation identified in DTD have the specific trauma and attachment antecedents that have been hypothesized and whether these are distinct from those associated with PTSD remains untested. This is important because pediatric PTSD, particularly in the aftermath of childhood exposure to interpersonal trauma, is often accompanied by other internalizing and externalizing problems (Lieberman et al., 2015; Wamser-Nanney & Vandenberg, 2013) consistent with DTD.

We therefore designed the present study to test the hypotheses that (a) children who meet the symptom criteria for DTD are more likely to have a history of both interpersonal trauma and disrupted relationships with primary caregivers (i.e., attachment trauma) than other children, including children who meet criteria for PTSD; (b) DTD symptom severity will be higher if both interpersonal and attachment trauma have occurred than if either occurred alone, a hypothesis based on evidence that cumulative exposure to trauma and/or adversity is associated with increasingly severe emotional and behavioral problems (D'Andrea et al., 2012); and (c), given evidence of impairment in multiple domains (D'Andrea et al., 2012), the severity of DTD symptoms in each of the self-regulation domains it assesses will also be associated with exposure to either interpersonal trauma, attachment trauma, or both.

Method

Participants and Procedure

A convenience sample of families of 236 children aged 7–18 years ($M = 12.1$ years, $SD = 3.0$; 50.0% female) from varied ethnocultural backgrounds (50.4% White non-Hispanic, 29.3% Black, 16.9% Latino/Hispanic, and 3.4% Asian American) was recruited at sites in three geographical regions in the United States (Northeast, Mid-Atlantic, South, and Midwest) that represented a mix of urban, suburban, and rural communities. Parent or guardian consent and youth assent were obtained with a protocol approved by the University of Connecticut Health Center Institutional Review Board (IRB) and the local site IRB or institutional research review authority. Interviewers received training on administration of all measures and were required to demonstrate calibration with master raters prior to conducting study interviews. Interviews were conducted with either the parent alone (53.0%), the child alone (for youths aged 10–17 only; 7.6%), or the parent and child together (39.4%); in the latter case, in light of evidence of potential underreporting of internalizing problems by parents of preadolescents (van de Looij-Jansen, Jansen, de Wilde, Donker, & Verhulst, 2011), each index trauma event or symptom was considered present if endorsed by either respondent.

Participating children were referred by pediatric healthcare professionals ($N = 24$, 10.2%) or mental health or social work professionals conducting outpatient ($N = 189$, 80.1%) or residential ($N = 23$, 9.7) treatment. Providers invited the parent and child to participate in "a research study on children's life experiences and socioemotional adjustment." A majority of participating children (76.6) were not living with both birth parents and were instead living with a stepfamily (32.6%), other relatives (7.6%), or a foster or adoptive family (25.5%) or in a residential facility (29.1%). Almost all (90.3%) participants reported at least one type of past trauma and/or adversity, including traumatic loss (61.3%), mentally ill primary caregiver (47.8%), family violence (46.7%), severe neglect (42.8%), emotional abuse (27.9%), family member arrested (24.5%), sexual trauma (20.8%), witnessing community violence (17.5%), and noninterpersonal traumas (e.g., severe accident, illness, or disaster; 61.3%).

Measures

Developmental trauma disorder. The 15-symptom Developmental Trauma Disorder Semi-Structured Interview (DTD-SI Version 10.0; see Table 1) yields reliable, structurally meaningful, and valid item- and criterion-level data for the proposed DTD syndrome (see Ford, Spinazzola, van der Kolk, & Grasso, in press, for a description of DTD-SI interviewer training and calibration as well as psychometrics). A symptom threshold–based formula to classify DTD as present or absent was developed based on the results of initial psychometric analyses. For DTD to be classified as present based on current symptoms, three of four Criterion B (i.e., affect/bodily dysregulation) symptoms, two of five Criterion C (i.e., attentional/behavioral dysregulation) symptoms, and two of six Criterion D (i.e., self/relational dysregulation) symptoms must have been (a) present in the past month and (b) associated with clinically significant psychosocial impairment for the child.

Table 1
Proposed Developmental Trauma Disorder (DTD) Criteria

Criterion A: Lifetime contemporaneous exposure to both types
   of developmental trauma
     A1: Interpersonal victimization
     A2: Disruption in attachment with primary caregiver(s)
Criterion B (Current emotion or somatic dysregulation, 4 items;
   3 required for DTD)
     B1: Emotion dysregulation
     B2: Somatic dysregulation
     B3: Impaired access to emotion or somatic feelings
     B4: Impaired verbal mediation of emotion or somatic
   feelings
Criterion C (Current attentional or behavioral dysregulation, 5
   items; 2 required for DTD)
     C1: Attention bias toward or away from threat
     C2: Impaired self-protection
     C3: Maladaptive self-soothing
     C4: Nonsuicidal self-injury
     C5: Impaired ability to initiate or sustain goal-directed
   behavior
Criterion D (Current relational or self-dysregulation, 6 items; 2
   required for DTD)
     D1: Self-loathing or self viewed as irreparably damaged
   and defective
     D2: Attachment insecurity and disorganization
     D3: Betrayal-based relational schemas
     D4: Reactive verbal or physical aggression
     D5: Impaired psychological boundaries
     D6: Impaired interpersonal empathy

Traumatic events. The Traumatic Events Screening Inventory (TESI) is a semistructured interview (Ford et al., 2000) that assesses 23 behaviorally anchored types of stressors. Items were added to the TESI to assess unexpected death of or suicide attempt/nonsuicidal self-injury by someone close, a primary caregiver impaired by psychiatric disorder or substance use, emotional abuse, and neglect. Items are scored dichotomously and combined into composite categories: noninterpersonal trauma (i.e., severe accidents, illnesses, or disasters witnessed or directly experienced and animal attacks); four types of interpersonal trauma (i.e., physical abuse or assault, sexual abuse or assault, family violence, and community violence), and four types of primary attachment adversity (i.e., traumatic loss due to death of or prolonged separation from primary caregiver[s] or other primary support relationships, primary caregiver[s] impaired by behavioral health problems, emotional abuse, and severe neglect). Items on the TESI have shown evidence of retest reliability and criterion/predictive validity with similarly aged youth (Daviss, Mooney, et al., 2000; Daviss, Racusin, et al., 2000). Although not required for a diagnosis of PTSD based on *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM*-5) criteria, TESI items were coded as having occurred only if the child had a peritraumatic subjective reaction of fear, helplessness, or horror. Interrater agreement was acceptable or better for each of the nine TESI composite scores, $\kappa s = 0.67–1.00$. Polyvictimization was coded if the child experienced five or more of the interpersonal traumas or attachment adversities (Ford, Wasser, & Connor, 2011). In most cases, data on age and chronicity of exposure could not be provided by caregivers who were not birth parents; therefore, findings for those key qualifiers could not be reported.

Psychiatric disorders. The Kiddie Schedule for Affective Disorders and Schizophrenia, Present/Lifetime Version (KSADS/PL) is a semistructured clinical research interview used to assess *DSM-IV* child psychiatric disorders, with separate versions for child self-report and parent report (Kaufman, Birmaher, Brent, Rao, & Ryan, 1996). The KSADS PTSD module was used to ascertain PTSD symptoms and diagnosis. Interrater reliability was excellent for the PTSD diagnosis, $\kappa = 1.00$.

Data Analysis

We used descriptive statistics to characterize the sample and key study variables, followed by bivariate cross-tabulation analyses with odds ratios (*OR*s) and 95% confidence intervals to examine unadjusted associations between age, gender, ethnicity, and family status with DTD, PTSD, and the trauma history variables. We tested our first hypothesis, that children who meet the symptom criteria for DTD are more likely to have a history of both interpersonal trauma and disrupted relationships with primary caregivers, with unadjusted odds ratios and 95% confidence intervals calculated for DTD and PTSD with each trauma history variable. To test our second hypothesis, that DTD symptom severity would be higher if both interpersonal and attachment trauma had occurred than if either occurred alone, we used cross-tabulations to examine the association between each component of the proposed DTD stressor criterion (A1, interpersonal victimization; A2, attachment trauma) and the overall DTD Criterion A (both A1 and A2) and the overall DTD symptom criteria and each DTD domain (Criterions B, C, and D). Additionally, we tested the cumulative DTD symptom burden reported by children who met DTD Criterion A versus only Criterion A1, only Criterion A2, or neither A1 or A2, with an analysis of variance (ANOVA) followed by post hoc Scheffe tests to identify homogeneous subsets, and an analysis of covariance including demographics, polyvictimization, and PTSD. We tested our third hypothesis, that the severity of DTD symptoms in each of the self-regulation domains it assesses would also be associated with exposure to either or both interpersonal and attachment trauma, with multivariate logistic regression analyses of the associations between trauma history variables with DTD and PTSD after adjusting for the effect of the other disorder.

Results

Sociodemographic Correlates of DTD, PTSD, and Trauma History Variables

Age was unrelated to the presence of DTD or PTSD, or to history of exposure to any type of potentially traumatic stressor or childhood adversity, except that adolescents (youths aged 13–18 years) were more likely than children (aged 7–12 years) to report a past traumatic loss, $OR = 1.90$, 95% CI [1.08, 3.30] (see Tables 2 and 3 for demographic correlate findings). Gender was unrelated to DTD, PTSD, or trauma exposure except that girls were more likely than boys have past sexual trauma, $OR = 3.19$, 95% CI [1.61, 6.33], and impaired caregiver trauma, $OR = 1.95$, 95% CI [1.14, 3.33]. Ethnocultural background was unrelated to DTD, PTSD, or trauma exposure, except that Black or Hispanic children were more likely than White children to have a history of community violence, $OR = 2.65$, 95% CI [1.30, 5.38)], but White children were more likely to have impaired caregivers, $OR = 1.71$, 95% CI [1.02, 2.92]. Although children living outside their birth family (i.e., with stepfamilies, foster families, or adoptive caregivers, or in out-of-home residential placements) were not more likely than those living with their birth family to meet criteria for DTD or PTSD; they were more likely to have experienced family violence, $OR = 2.67$, 95% CI [1.37, 5.21]; sexual trauma, $OR = 3.11$, 95% CI [1.16, 8.33]; traumatic neglect, $OR = 6.99$, 95% CI [2.08, 23.45]; and impaired caregivers, $OR = 3.84$, 95% CI [2.02, 7.30].

Association Between DTD and PTSD and Past Exposure to Traumatic Stressors and/or Adversities

On an unadjusted bivariate basis, both DTD and PTSD were associated with a history of exposure to several types of interpersonal trauma and attachment adversity (Table 4): physical assault or abuse, family violence, traumatic neglect, emotional abuse, and polyvictimization, $\chi^2(1, Ns = 229–230) = 4.39–21.43$, log likelihood = 259.09–296.16, Nagelkerke $R^2 = .03–.12$, $p = .036$ to $p < .001$. Children who met criteria for DTD (but not those with PTSD) were also more likely to report community violence exposure, $\chi^2(1, N = 229) = 7.97$, log likelihood = 291.15, Nagelkerke $R^2 = .05$, $p = .005$; and impaired caregivers, $\chi^2(1, N = 236) = 18.22$, log likelihood = 291.37, Nagelkerke $R^2 = .10$, $p < .001$.

When the effects of DTD and exposure to all types of trauma/adversity were included in a multivariate regression model, PTSD was associated only with past physical assault or abuse, $\chi^2(10, N = 229) = 33.17$, log likelihood = 241.88, Nagelkerke $R^2 = .21$, $p = .032$ (Table 5). When the effects of PTSD and exposure to all types of trauma and adversity were included in a second multivariate regression model, DTD was associated with three trauma and/or adversity types: family violence, community violence, and impaired caregivers, $\chi^2(10, N = 229) = 46.54$, log likelihood = 256.58, Nagelkerke $R^2 = .26$, $p < .001$.

Association Between Full and Partial DTD Criterion A and DTD

More than half of the participating children met full DTD Criterion A (58.5%; $N = 138$). The remaining participants were equally divided into subgroups of 32 or 33 individuals (approximately 14% of the sample per subgroup), including children who met (a) Criterion A1 only, (b) Criterion A2 only, or (c) neither Criterion A1 nor Criterion A2 (see Table 6). Only two (6.1%) of the children with no history of A1 or A2 symptoms met DTD symptom criteria. Higher percentages of children with histories of either A1 or A2 symptoms only met the DTD symptom criteria (for A1 only, $N = 8$, 25.0%; for A2 only, $N = 10$, 30.3%). A still higher proportion (49.3%) of the children who fully met Criterion A (i.e., both interpersonal victimization and attachment adversity) also met the DTD symptom criteria, overall $\chi^2(3, N = 236) = 24.996$, $p < .001$. Meeting full Criterion A was associated with an increased likelihood of meeting the DTD symptom criteria compared to only meeting Criterion A1, $OR = 2.91$, 95% CI [1.23, 6.94; Criterion A2, $OR = 2.23$, 95% CI [1.00, 5.04]; or neither A1 nor A2, $OR = 15.06$, 95% CI [3.47, 65.38].

In a multivariate analysis of variance (MANOVA), $F(9, 686) = 7.98$, $p < .001$, followed by univariate analyses of variance (ANOVAs), $Fs(3, 232) = 10.47–21.89$, $ps < .001$, DTD Criterion A status was significantly associated with the number of total DTD symptoms as well as DTD Criterion B, C, and D symptoms (see Table 6 for details). Similar results were found with a MANCOVA that included demographics (age, gender, race/ ethnicity [white vs. black/Hispanic]), polyvictimization, and PTSD as covariates, $F(9, 650) = 3.29$, $p = .001$, followed by analyses of covariance (ANCOVAs), $Fs(3, 223) = 2.74–9.32$, $ps < .001$ (except DTD Criterion C symptoms, in which $p = .270$). Children who met DTD Criterion A reported more total DTD symptoms overall and more Criterion D (interpersonal/self-dysregulation) symptoms than children who met only Criterion A1, only A2, or neither A1 or A2. Meeting either A1 or A2 alone also was associated with higher total DTD symptoms and Criterion D symptoms than meeting neither A1 nor A2. The A1 and A2, A1 only, and A2 only subgroups had comparable levels of Criterion B and C symptoms, which were significantly higher than those of children with neither A1 nor A2 exposure.

Discussion

Consistent with what has been reported in prior research, we found that both DTD (D'Andrea et al., 2012) and PTSD (Copeland, Keeler, Angold, & Costello, 2007; McLaughlin et al., 2013) were associated with a history of several types interpersonal trauma and attachment adversity. However, physical assault/abuse was the only unique antecedent associated with PTSD after controlling for DTD, and it was not associated with DTD after controlling for PTSD. In contrast, study findings supported the hypothesis that children who meet symptom

Table 2
Sociodemographic Correlates of Developmental Trauma Disorder (DTD), Posttraumatic Stress Disorder (PTSD), and Trauma History Variables

Variable	Full Sample		DTD (N = 236)		PTSD (N = 236)		Noninterpersonal Trauma (N = 230)		Traumatic Loss (N = 229)		Physical Violence (N = 229)		Community Violence (N = 229)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Full sample			86	36.4	69	29.2	141	61.3	75	32.8	135	59.0	50	17.5
Age (years)[a]														
< 13	128	55.9	47	36.7	33	25.8	75	58.6	34	26.2*	77	60.2	21	16.4
≥ 13	101	44.1	39	38.6	36	35.5	66	65.3	41	41.5	58	57.4	19	18.8
Sex														
Female	118	50.0	46	39.0	40	33.9	68	57.6	39	33.1	67	56.8	21	17.8
Male	118	50.0	40	33.9	29	24.7	73	61.9	36	30.1	68	57.6	19	16.1
Race[b]														
Non-White	104	45.4	41	39.4	32	30.8	60	57.7	34	32.7	61	58.6	26	25.0*
White	125	54.6	45	36.0	37	29.6	81	65.2	41	32.3	74	59.4	14	11.2*
Family situation[c]														
Nonbirth family	184	78.0	71	38.6	57	31.0	115	62.5	60	32.6	109	59.2	30	16.3
Birth family	52	22.0	15	28.8	12	22.6	26	50.0	15	28.8	26	50.0	10	19.2

Note.
[a]Age < 13 years = preteen; age ≥ 13 years = adolescent. [b]Non-White = Black or Latino/Hispanic. [c]Nonbirth family = not living in intact birth family, Birth family = living with intact birth family.
*$p < .05$.

Table 3
Sociodemographic Correlates of Intrafamilial Violence, Abuse, Neglect, and Caregiver Impairment Variables

Variable	Full Sample		Family Violence (N = 229)		Sexual Abuse (N = 230)		Emotional Abuse (N = 229)		Traumatic Neglect (N = 230)		Impaired Caregiver (N = 236)	
	n	%	n	%	n	%	n	%	n	%	n	%
Full sample			107	46.7	48	20.9	48	20.9	56	24.4	119	51.0
Age (years)												
< 13			60	46.9	23	17.9	27	21.1	22	17.1	63	49.2
≥ 13			60	46.9	26	25.6	21	20.7	23	22.7	56	55.3
Sex												
Female	118	50.0	60	50.1	35	29.7*	28	23.7	26	22.0	66	55.9
Male	118	50.0	47	39.9	14	11.9*	20	16.9	30	25.5	53	44.9
Race[a]												
Non-White	104	45.4	48	46.2	28	27.2	25	24.6	20	18.3	47	45.2*
White	125	54.6	59	47.3	21	16.7	23	18.0	36	28.8	72	57.6*
Family situation[b]												
Nonbirth family	184	78.0	92	50.0*	44	23.9*	42	23.1	53	28.8*	101	54.9*
Birth family	52	22.0	15	28.8*	5	9.6*	6	11.5	3	5.8*	18	34.6*

Note.
[a]Non-White = Black or Latino/Hispanic. [b]Nonbirth family = not living in intact birth family, Birth family = living with intact birth family.
*$p < .05$.

Table 4

Unadjusted Associations of Developmental Trauma Disorder (DTD) and Posttraumatic Stress Disorder (PTSD) with Trauma History Variables

Type of Childhood Trauma or Adversity	DTD		PTSD	
	OR	95% CI	*OR*	95% CI
Noninterpersonal trauma	1.30	[0.75, 2.26]	1.73	[0.94, 3.17]
Physical assault/abuse trauma	2.70*	[1.51, 4.82]	3.58*	[1.84, 6.96]
Family violence	3.66*	[2.08, 6.43]	1.85*	[1.04, 3.30]
Community violence	2.71*	[1.35, 5.43]	1.62	[0.79, 3.32]
Sexual trauma	1.48	[0.78, 2.80]	1.72	[0.92, 3.48]
Traumatic loss of primary relationship(s)	0.83	[0.47, 1.48]	1.66	[0.92, 3.01]
Emotional abuse	2.70*	[1.49, 4.88]	2.87*	[1.55, 5.29]
Traumatic neglect	2.01*	[1.17, 3.47]	2.79*	[1.55, 5.02]
Impaired caregiver(s)	3.28*	[1.87, 5.74]	1.67	[0.94, 2.95]
Polyvictimization[a]	3.18*	[1.52, 6.60]	3.02*	[1.45, 6.27]

Note. OR = odds ratio.
[a]Five or more types of interpersonal trauma.
* $p < .05$.

criteria are more likely than other children to have a history of interpersonal trauma and attachment adversity, independent of the effects of PTSD. The DTD exposure criterion also received partial support, based on the association of full Criterion A (vs. A1 only, A2 only, or neither) with total DTD and self/relational dysregulation symptoms (Criterion D), independent of the effects of PTSD, polyvictimization, and demographic variables gender, age, and race/ethnicity. However, both Criterion A1

Table 5

Multivariate Logistic Regression Analyses

Variable	*b*	*SE*	Wald *F*	*df*	*p*	*OR*	95% CI
			Outcome Variable: PTSD				
DTD	1.09	0.34	10.45	1	.001	2.97	[1.54, 5.75]
Noninterpersonal trauma	0.28	0.37	0.57	1	.535	1.32	[0.64, 2.70]
Traumatic loss	0.40	0.35	1.34	1	.247	1.49	[0.76, 2.94]
Physical assault or abuse	0.84	0.39	4.56	1	.033	2.31	[1.07, 4.99]
Family violence	−0.33	0.39	0.71	1	.399	0.72	[0.33, 1.55]
Community violence	−0.00	0.41	0.00	1	.994	1.00	[0.44, 2.24]
Sexual trauma	−0.01	0.40	0.00	1	.988	0.99	[0.45, 2.18]
Emotional abuse	0.19	.0.37	0.21	1	.651	1.23	[0.53, 2.80]
Traumatic neglect	0.28	0.39	0.86	1	.353	1.44	[0.67, 3.07]
Impaired caregiver(s)	0.64	0.41	2.40	1	.121	1.89	[0.85, 4.24]
			Outcome Variable: DTD				
PTSD	1.10	0.34	10.37	1	.001	3.01	[1.67, 6.39]
Noninterpersonal trauma	0.07	0.34	0.04	1	.841	1.07	[0.55, 2.09]
Traumatic loss	−0.44	0.34	1.65	1	.199	0.64	[0.33, 1.26]
Physical assault or abuse	0.39	0.36	1.15	1	.284	1.47	[0.73, 2.98]
Family violence	0.97	0.36	7.26	1	.007	2.63	[1.30, 5.33]
Community violence	0.88	0.40	4.76	1	.029	2.38	[1.09, 5.97]
Sexual trauma	−0.12	0.40	0.09	1	.763	0.89	[0.40, 1.94]
Emotional abuse	−0.10	0.42	0.05	1	.817	0.91	[0.40, 2.08]
Traumatic neglect	−0.46	0.39	1.40	1	.237	0.63	[0.29, 1.36]
Impaired caregiver(s)	0.77	0.37	4.26	1	.039	2.16	[1.04, 4.47]

Note. PTSD = posttraumatic stress disorder; DTD = developmental trauma disorder; OR = odds ratio.

Table 6

Number of Developmental Trauma Disorder (DTD) Symptoms Associated With Full and Partial DTD Criterion A

DTD Criterion A	Total DTD Symptoms			Criterion B Symptoms			Criterion C Symptoms			Criterion D Symptoms		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
No Criterion A	33	2.48[a]	3.22	33	0.96[a]	1.26	33	0.82[a]	1.21	33	0.70[a]	1.21
IPT only	32	5.81[b]	3.63	32	1.91[b]	1.33	32	1.81[b]	1.20	32	2.10[b]	1.65
AA only	33	6.79[b]	3.73	33	2.06[b]	1.30	33	1.94[b]	1.46	33	2.79[c]	1.67
Full Criterion A	138	8.16[c]	3.82	138	2.59[b]	1.26	138	2.30[b]	1.43	138	3.28[d]	1.82
Total sample	236	6.86	4.17	236	2.19	1.39	236	1.97	1.46	236	2.69	1.92

Note. DTD = developmental trauma disorder; IPT = interpersonal trauma; AA = attachment adversity. Mean (*M*) values with different superscripts in each column differ by *p* < .05.

alone (interpersonal trauma) and Criterion A2 alone (attachment adversity) were each as strongly associated with DTD symptoms of affect/body dysregulation (Criterion B) and attention/ behavior dysregulation (Criterion C) as was full DTD Criterion A.

Attachment adversity has been found to be associated with severe, complex, and chronic biopsychosocial impairment in childhood and across the lifespan (Berthelot et al., 2015; Feerick, Haugaard, & Hien, 2002; Frewen, Brown, DePierro, D'Andrea, & Schore, 2015; McKelvey, Whiteside-Mansell, Conners-Burrow, Swindle, & Fitzgerald, 2016; Myers & Wells, 2015; Reid & Sullivan, 2009; Sheinbaum, Kwapil, & Barrantes-Vidal, 2014; Van Dijke, Ford, Frank, Van Son, & Van der Hart, 2013; van Dijke, Ford, Frank, & van der Hart, 2015; Widom, Horan, & Brzustowicz, 2015; Wiltgen, Arbona, Frankel, & Frueh, 2015). Attachment adversity often co-occurs with other forms of interpersonal victimization (Bailey, Moran, & Pederson, 2007; D. Grasso, Dierkhising, Branson, Ford, & Lee, 2016; McKelvey et al., 2016; Seto, Babchishin, Pullman, & McPhail, 2015; Thoresen, Myhre, Wentzel-Larsen, Aakvaag, & Hjemdal, 2015). Our findings are consistent with research suggesting that the combination of interpersonal trauma and attachment adversity has an adverse synergistic effect on psychosocial development (Lowe et al., 2016).

In addition, although interpersonal trauma and attachment adversity were each separately associated with affective/somatic and attentional/behavioral dysregulation, their combination was particularly strongly associated with self/relational dysregulation, independent of the effect of PTSD. Consistent with these results, in adults, self/relational dysregulation has been identified as a core feature of a complex variant of PTSD that is distinct from traditional PTSD (Karatzias et al., 2017). The specific forms of interpersonal trauma (i.e., family and community violence) and attachment adversity (i.e., impaired caregivers) that were uniquely associated with DTD, independent of PTSD, represent not just the impact of specific traumatic injuries but a child's entire social ecology that is characterized by persistent exposure to pervasive threat (Lieberman & Van Horn, 2009; McLaughlin & Sheridan, 2016). This is consistent with the frameworks of the Adverse Childhood

Experiences study (Felitti et al., 1998) and polyvictimization research (Finkelhor, Ormrod, & Turner, 2007). Our findings extend the research results from those paradigms by suggesting that the combination of family and community violence and impaired caregivers may constitute a particularly detrimental risk of impaired self and relational function and development for children over and above the contributions of other traumas and adversities.

Several forms of interpersonal trauma and attachment adversity were associated with both DTD and PTSD, consistent with research demonstrating an association between childhood victimization and attachment disruption with a range of psychosocial problems and psychiatric disorders that include, but are not limited to, PTSD (D'Andrea et al., 2012). In the case of physical abuse/assault, its unique association with PTSD after controlling for the effect of DTD suggests that its association with DTD may be largely through its etiological contribution to PTSD and to the comorbid occurrence of PTSD with DTD. However, physical assault has no inherent association with attachment security, whereas physical abuse by a primary caregiver is likely to constitute serious attachment adversity. Thus, combining physical assault and abuse into a single variable may have obscured an association between physical abuse by a primary caregiver and DTD, which thus warrants additional investigation (Van Dijke et al., 2013).

We found that the attachment adversities represented by emotional abuse and neglect were associated with both PTSD and DTD on a bivariate, but not multivariate, basis. Research indicates that both emotional abuse (Spinazzola et al., 2014; Taillieu, Brownridge, Sareen, & Afifi, 2016; Teicher & Samson, 2013) and neglect (Shin, Miller, & Teicher, 2013; Widom, Czaja, Wilson, Allwood, & Chauhan, 2012; Widom, Czaja, Bentley, & Johnson, 2012; Widom, Czaja, & Paris, 2009) may be involved in either classic PTSD or the broader array of dysregulation characterizing DTD. Our findings indicate that although these forms of childhood adversity may not play a primary role in either PTSD or DTD, they may be secondary contributors to both syndromes when a child is exposed to physical assault/abuse or interpersonal trauma and impaired caregivers.

One form of potential attachment adversity—traumatic loss—was unrelated to both DTD and PTSD. This may be due to insufficient measurement specificity as the TESI item for traumatic loss does not require that the loss involve a primary caregiver but rather only a person whom the child depends upon or views as emotionally close. Traumatic loss also may result in complex bereavement, which is related to but distinct from PTSD (Kaplow, Howell, & Layne, 2014). Complex bereavement involves emotion and attentional dysregulation that may overlap with that which is found in DTD, but the primary focus of affect and cognition in complex bereavement is much more specific than that in DTD and involves distress and rumination specific to the lost loved one (Kaplow et al., 2014; Kaplow & Layne, 2014). Although more than half of the children who met symptom criteria for DTD had experienced traumatic losses that may have contributed to their distress and biopsychosocial impairment, traumatic loss does not appear to be a specific risk for DTD.

One form of interpersonal trauma also was unrelated to both DTD and PTSD. Although prior research has linked sexual trauma in childhood to PTSD, most children who experience sexual abuse do not meet criteria for PTSD and there is no evidence of any neurobiological difference between those who do or do not have PTSD, with the exception of a tendency for those with PTSD to have declining cortisol levels over time (Simsek, Uysal, Kaplan, Yuksel, & Aktas, 2015). Prospective studies have shown that childhood sexual trauma can have profound and debilitating consequences in adolescence and well into adulthood that are comparable in severity, although different in form and clinical presentation, to the posttraumatic difficulties experienced by multiply traumatized children who are not sexually abused (Barnes, Noll, Putnam, & Trickett, 2009; Lewis, McElroy, Harlaar, & Runyan, 2016). In another study, youth identified by latent class analysis as likely to have experienced sexual trauma in middle childhood (i.e., between the ages of 7–12 years) tended not to report other types of traumatic exposure in that developmental period nor to exhibit clinically significant parent-reported externalizing or internalizing psychosocial problems; however, they were as likely as polyvictimized youth (who reported on average more than six types of traumatic stressors in that developmental epoch) to have clinically significant PTSD intrusive re-experiencing and hyperarousal symptoms; approximately 90% of both the sexual trauma subgroup and the polyvictim subgroup reported those hallmark PTSD symptoms at clinically significant levels (Grasso et al., 2016). A study with a sample of young women identified a distinct subgroup of participants who were likely to have experienced childhood sexual abuse and to report clinically significant symptoms of PTSD, depression, and somatoform disorders but not other DTD symptoms, including emotion dysregulation, unstable relationships, and dissociation (Seng, D'Andrea, & Ford, 2014). Thus, some but not all features of both PTSD and DTD warrant assessment when characterizing the sequelae of sexual trauma.

As hypothesized, children who met criteria for DTD were not more likely than others to have lifetime histories of noninterpersonal trauma (e.g., severe accidents or illness) or traumatic losses. Thus, although psychologically traumatic accidents or injuries in childhood have been found to be associated with a range of internalizing psychopathology not limited to PTSD (Kim et al., 2009; Olofsson, Bunketorp, & Andersson, 2009; Schafer, Barkmann, Riedesser, & Schulte-Markwort, 2006), DTD appears to be distinct from the sequelae of those types of noninterpersonal trauma. Posttraumatic stress disorder also did not achieve statistical significance in relation to noninterpersonal trauma, although the effect size estimate for the association between PTSD and noninterpersonal trauma in this sample was approximately double that for DTD (i.e., $\eta = .116$ vs. $\eta = .060$, respectively).

The study had several limitations that should be considered when interpreting its results. The convenience sample is not representative of community populations of children and includes an overrepresentation of children with extensive trauma histories and psychiatric morbidity. The assessment of trauma history, although done with a well-validated and widely used semistructured interview measure, was retrospective and included the input of both child and parent in only a subset of cases. Data on age and chronicity of trauma exposure could not be reported, and exposure may have been underreported by children due to reluctance to disclose such information in a caregiver's presence or due to a current nonbirth caregiver's lack of knowledge of events prior to caring for the child. We assessed PTSD based on the now-outdated *DSM-IV* criteria because the K-SADS for *DSM*-5 was not yet available. Assessment of attachment trauma was done indirectly based on traumatic events (i.e., prolonged separations) and contexts (i.e., severe caregiver impairment) that are likely but not definitively associated with disruption in secure child–caregiver attachment

Study findings extend the growing body of research demonstrating the multidomain impairments in biopsychosocial self-regulation that are sequelae of developmental trauma (D'Andrea et al., 2012). Future directions for research include replication using the DTD-SI with similar and different populations and prospective corroborated assessment of trauma and attachment history, with particular attention to early developmental and chronic exposures and relational circumstances. Research is needed to determine whether interpersonal trauma and attachment disruption and associated developmental risk factors (e.g., neglect) occurred in early childhood, middle childhood, and/or adolescence; on a single-incident versus chronic or ongoing episodic basis; and in what specific forms, as well as to identify the subsequent longitudinal trajectories of symptoms and impairments in childhood, adolescence, and adulthood. Implications for clinical practice include the importance of clinician awareness that assessment and treatment for children who have experienced a combination of traumatic interpersonal victimization and disruption of secure attachment should address the biopsychosocial impairments that include symptoms of PTSD but may extend well beyond PTSD to include DTD's developmental problems with self-regulation of emotion, bodily integrity, attention, cognition, behavioral self-control, and

interpersonal relatedness. Finally, results from this field trial show in bold relief the potentially most vulnerable high-risk subpopulation of polyvictims: children and adolescents who endure disruption or impairment in their primary caregiving relationships while attempting to grow up in the midst of chronic familial and community violence. For such youth, love often is in short supply, danger abounds, and attempts to survive can take the form of clinical problems that may be best understood and treated as resilient adaptations to trauma during childhood and adolescence.

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