

Understanding Interpersonal Trauma in Children: Why We Need a Developmentally Appropriate Trauma Diagnosis

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Childhood exposure to victimization is prevalent and has been shown to contribute to significant immediate and long-term psychological distress and functional impairment. Children exposed to interpersonal victimization often meet criteria for psychiatric disorders other than posttraumatic stress disorder (PTSD). Therefore, this article summarizes research that suggests directions for broadening current diagnostic conceptualizations for victimized children, focusing on findings regarding victimization, the prevalence of a variety of psychiatric symptoms related to affect and behavior dysregulation, disturbances of consciousness and cognition, alterations in attribution and schema, and interpersonal impairment. A wide range of symptoms is common in victimized children. As a result, in the current psychiatric nosology, multiple comorbid diagnoses are necessary—but not necessarily accurate—to describe many victimized children, potentially leading to both undertreatment and overtreatment. Related findings regarding biological correlates of childhood victimization and the treatment outcome literature are also reviewed. Recommendations for future research aimed at enhancing diagnosis and treatment of victimized children are provided.

Childhood exposure to interpersonal traumatic stressors is extremely common and has been described as a silent epidemic (Kaffman, 2009). Worldwide, approximately one third of children are estimated to experience physical abuse; approximately one in four girls and one in five boys experience sexual victimization (Anda et al., 1999; Felitti et al., 1998; Putnam, 2003; United Nations, 2006). Each year in the United States, one million children experience substantiated abuse (U.S. Department of Health and Human Services, 2007). Some estimates place the fiscal cost of childhood abuse and neglect in 2007 at \$103.8 billion (Wang & Holton, 2007), including foster care and residential treatment. Child abuse-related hospitalizations resulted in fatalities at 10-fold the rate of non-child-abuse hospitalizations, incurred twice the cost of non-abuse-related hospitalizations (\$19,266 vs. \$9,153 in 1999), and were twice as

often paid for through Medicaid (Rovi, Chen, & Johnson, 2004). The National Institute of Justice estimates that the combined costs of mental health care, social services, medical care, and police services are \$4,379 per incident of childhood abuse.

The financial costs of childhood victimization represent an urgent public health need that has been identified as the most significant public health issue in the country (Anda et al., 2006). Consistent with social cost, childhood victimization accrues significant mental health consequences for those victimized by it. Both short-term (Beitchman, Zucker, Hood, DaCosta, & Akman, 1991; Danielson et al., 2010; Zinzow, Ruggiero, Resnick, Smith, & Saunders, 2009) and long-term consequences (Beitchman et al., 1992; Irish, Kobayashi, & Delahanty, 2010) have been documented in large-scale epidemiological samples (Green, McLaughlin, Berglund, Gruber, & Sampson, 2010; Kessler, Davis, & Kendler, 1997) and meta-analyses (Koenen, Moffitt, Poulton, Martin, & Caspi, 2007; Neumann, Houskamp, Pollock, & Briere, 1996). Numerous studies have shown that exposure to interpersonal trauma can chronically and pervasively alter social, psychological, cognitive, and biological development (Burns et al., 1998; Cook et al., 2005; Spinazzola et al., 2005).

Children experience many forms of traumatic interpersonal adversity in addition to physical and sexual abuse. Unfortunately,

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victimization in childhood may take many forms, including assault, abduction, bullying, and neglect. As described by a leading researcher, Finkelhor:

[V]ictimization can be defined as harm that comes to individuals because other *human actors* have behaved in ways that *violate social norms*. Even though we sometimes refer to people as “victims of hurricanes”, “cancer victims”, or “accident victims”, the more common reference for the term *victimization* is interpersonal victimization. In interpersonal victimization, the elements of malevolence, betrayal, injustice, and immorality are more likely to be factors than in accidents, diseases, and natural disasters. (Finkelhor, 2008, p. 23)

No single current psychiatric diagnosis accounts for the cluster of symptoms that research has shown frequently to occur in children exposed to interpersonal trauma. Despite the breadth of posttrauma dysfunction, the current diagnostic cornerstone, the *Diagnostic and Statistical Manual, Fourth Edition (DSM-IV*; American Psychiatric Association, 1994), has only one diagnosis that specifically identifies trauma as an antecedent: posttraumatic stress disorder (PTSD). However, PTSD may not fully capture the spectrum of posttrauma symptoms, particularly among children. For example, fewer than a quarter of children in treatment for trauma-related psychopathology with the National Child Traumatic Stress Network meet criteria for PTSD (Pynoos et al., 2008), and other researchers report that PTSD is the 5th (Ackerman, Newton, McPherson, Jones, & Dykman, 1998) and 10th (Copeland, Keeler, Angold, & Costello, 2007) most common disorder in childhood following exposure to traumatic stressors. Comorbidity seems to be the rule, rather than the exception: 40% of children with any trauma history have at least one other mood, anxiety, or disruptive behavior disorder diagnosis, and this relationship is exacerbated by exposure to increasing numbers of types of traumatic stressors (Copeland et al., 2007). Consistent with this finding, epidemiological (Finkelhor, Ormrod, & Turner, 2007; Ford, Elhai, Connor, & Frueh, 2010; Gustafsson, Nilsson, & Svedin, 2009; Holt, Finkelhor, & Kantor, 2007) and clinical (Cloitre et al., 2009; Ford, Connor, & Hawke, 2009; Ford, Fraleigh, & Connor, 2010; Ford et al., 2000) research has shown that the number and complexity of symptoms and diagnoses that children and adolescents suffer increases as the number of types of traumatic stressors that they were exposed to in childhood increases. Although other factors such as the chronicity, physical violation, and betrayal of trust involved in victimization play an important role in determining the risk and severity of posttraumatic symptoms and impairment experienced by children and adolescents, simply having been exposed to a greater breadth of types of victimization appears to be particularly influential in the development of multifaceted and severe symptoms that range across the spectrum of disorders (Finkelhor, Ormrod, & Turner, 2009).

Studies on the sequelae of serial or repeated childhood maltreatment, neglect, and interpersonal violence demonstrate that these types of victimization place children and adolescents at risk of chronic and severe coexisting problems with emotion regulation, impulse control, attention and cognition, dissociation, interpersonal relationships, and attributions. Responding to this critical mass of clinical, anecdotal, and empirically based observations of co-occurring symptom domains in this subpopulation of trauma victims, several investigators (Briere & Spinazzola,

2009; Cloitre et al., 2009; Dorahy, Corry, Shannon, MacSherry, & Hamilton, 2009; Ford & Courtois, 2009) and national organizations (Sykes Wylie, 2010) have called for refinement and clarification of current psychiatric diagnostic systems. In anticipation of forthcoming revisions to the *DSM*, we believe that it is important to call attention to a large body of empirical research conducted over the past two decades, the findings of which appear to converge to provide evidence for examination of the coherence and utility of a developmentally sensitive post-maltreatment diagnosis. Although it may appear obvious that child maltreatment results in negative outcomes, the state of the current literature has remained fragmented, owing to the fact that studies are conducted by islands of researchers who may not collaborate or integrate with one another (e.g., experimental psychologists, epidemiologists, developmental psychologists, and clinicians). The very wealth of the literature and the phenomenon of interest have had a paradoxical effect: Because the literature is so broad, the mental health community has struggled to comprehensively and systematically describe the effects of childhood victimization. Toward this end, in the present article, we examine the evidence that bears directly upon the following premises:

- Childhood victimization is followed by a spectrum of specific symptoms.
- These symptoms cannot be accounted for by any existing *DSM-IV* diagnosis or combination of comorbid diagnoses, including PTSD.
- Research on the biological systems disrupted by childhood trauma is consistent with this spectrum of behavioral, affective, cognitive, and relational symptoms.
- The application of nonspecific diagnoses to maltreated children reduces the likelihood of positive treatment outcomes, whereas interventions that comprehensively address the spectrum of problems of children exposed to interpersonal trauma increase the likelihood of positive treatment outcomes.

Throughout this review and conceptual article, we will primarily utilize the terms *victimization* or *interpersonal trauma* to refer to the range of maltreatment, interpersonal violence, abuse, assault, and neglect experiences encountered by children and adolescents, including familial physical, sexual, emotional abuse and incest; community-, peer-, and school-based assault, molestation, and severe bullying; severe physical, medical, and emotional neglect; witnessing domestic violence; as well as the impact of serious and pervasive disruptions in caregiving as a consequence of severe caregiver mental illness, substance abuse, criminal involvement, or abrupt separation or traumatic loss. This composite definition of interpersonal trauma derives from trauma exposure definitions and categories utilized by the National Child Traumatic Stress Network (NCTSN) in the Network's large, multisite, longitudinal child trauma database (Pynoos et al., 2008) as adapted from child trauma exposure definitions established by the National Child Abuse and Neglect Data System (NCANDS; U.S. Department of Health and Human Services, 2011). It is important to note that the literature on childhood interpersonal trauma and victimization is vast, and this article does not attempt to delineate or discuss

every pertinent publication. Rather, the goal of this conceptualization and review is to examine the phenomenology of childhood interpersonal trauma and victimization to suggest directions or strategies for improvements to the current diagnostic system. To do so, we will highlight findings that emerge most consistently in empirically based, scholarly peer-reviewed studies in this area of inquiry.

We would like to state one conundrum up front: Although we believe that the existing evidence suggests the need for a new paradigm for understanding adaptations to trauma, as suggested by others (e.g., Rutter, 2011; Taylor, 2011), while simultaneously recommending new diagnostic categories, we are presenting a paradox. It may appear that we are implicitly endorsing an approach to mental health that further pathologizes individuals living in toxic environments, rather than the environments themselves, and that takes categorical approaches to diagnosis as their starting point. Unfortunately, it may be the case of current events that a broad, but accurate, categorical diagnosis to describe developmental posttraumatic adaptations is a necessary step in moving toward more transactional frameworks. We will return to this topic at our conclusion.

Does Childhood Interpersonal Trauma Result in an Interrelated Set of Symptoms?

Numerous studies have documented that exposure to interpersonal trauma during childhood is related to increased incidence of affect and impulse dysregulation, alterations in attention and consciousness, disturbances of attribution and schema, and interpersonal difficulties. First, we will review studies documenting disruptions in each of these areas. Studies documenting co-occurring disruption across multiple domains are subsequently reviewed.

Dysregulation of Affect and Behavior

A variety of symptoms may represent affective and behavioral dysregulation. Such affective symptoms commonly found in children exposed to interpersonal violence include lability, anhedonia, flat or numbed affect, explosive or sudden anger, and incongruous or inappropriate affect. Behavioral expressions of affect regulation may include withdrawal, self-injury, aggression, oppositional behavior, substance use, or other compulsive behavior. Behavioral dysregulation may represent affective overload as well as attempts to dispel, reduce, or recover from negative affect states. Studies by Cicchetti and colleagues (Cicchetti & Rogosch, 2007; Maughan & Cicchetti, 2002; Rogosch & Cicchetti, 2005; Shields & Cicchetti, 2001), as well as other investigators (Cloitre, 2005; Noll, Trickett, Harris, & Putnam, 2009; Pollak, Messner, Kistler, & Cohn, 2009), have been instrumental in exploring affect dysregulation in maltreated children compared with nonmaltreated peers. In a series of studies, maltreated children were shown to have increased negative affect and general emotion dysregulation (e.g., emotional reactivity, inability to temper emotional responses) and inappropriate emotional responses (Lewis, Todd, & Honsberger, 2007; Shields & Cicchetti, 1998, 2001). Maltreated children also showed difficulty understanding and expressing emotions in experimental settings (Pollak, Cicchetti, Hornung, & Reed, 2000), but they

also appeared to be acutely sensitive to perceiving facial cues as connoting anger on the part of other persons (Pollak & Tolley-Schell, 2003; Pollak et al., 2009). Studies have documented that maltreated children are either hypersensitive or avoidant in response to negative emotional stimuli or are likely to interpret positive emotions as ambiguous (Pine et al., 2005; Pollak et al., 2000).

Children with difficulties interpreting emotions, paired with impulsivity, may be at risk for aggressive behavior (Ford, Fraleigh, Albert, & Connor, 2010; Ford, Fraleigh, & Connor, 2010). Not surprisingly, juvenile justice and delinquent youth have a disproportionately high rate of victimization with subsequent aggression, self-injury, substance abuse, sexual risk-taking, and oppositional behavior (Abram, Teplin, McClelland, & Dulcan, 2003; Abram et al., 2007; Ford, Hartman, Hawke, & Chapman, 2008; Jainchill, Hawke, & Messina, 2005; Kenny, Lennings, & Nelson, 2007; Teplin, McClelland, Abram, & Mileusnic, 2005).

Posttraumatic dysregulation of affect and behavior may also be manifested in internalizing symptoms that may lead to a diagnosis of affective, eating, or anxiety disorders (including but not limited to PTSD; Finkelhor et al., 2007; Gustafsson et al., 2009; Turner, Finkelhor, & Ormrod, 2006), as well as in academic or learning impairments (Holt et al., 2007) and diminished self-esteem (Turner, Finkelhor, & Ormrod, 2010a). Less frequently documented symptoms may mimic *freeze* or *tonic immobility* responses and behavioral and affective collapse (Marx, Forsyth, Gallup, Fuse, & Lexington, 2008; Rocha-Rego et al., 2009). Avolition, anhedonia, withdrawal, and unresponsive affects are also documented in childhood interpersonal trauma survivors (Atlas & Hiott, 1994; Lumley & Harkness, 2007).

Disturbances of Attention and Consciousness

Disturbances of attention and consciousness following exposure to interpersonal trauma may manifest as dissociation, depersonalization, memory disturbance, inability to concentrate (regardless of whether the task evokes trauma reminders), and disrupted executive functioning (e.g., ability to plan, problem solve). Several researchers have hypothesized that dissociation may take the form of inattention and impulsivity in traumatized children (Cromer, Stevens, DePrince, & Pears, 2006; Endo, Sugiyama, & Someya, 2006; Kaplow, Hall, Koenen, Dodge, & Amaya-Jackson, 2008). For example, in a study on the impact of dissociation on cognition, Cromer et al. (2006) examined executive control of children in foster care. They found that deficits in tasks requiring response inhibition were related to children's dissociation. Similarly, Endo et al. (2006) found that dissociative children appeared to meet criteria for attention-deficit/hyperactivity disorder (ADHD), but nonmaltreated children with ADHD did not appear to meet criteria for dissociative disorders. Kaplow et al. (2008) found that PTSD symptoms did not account for inattentiveness in maltreated children. As yet, the dividing line between dissociation and problems with attention and response inhibition is unclear. However, both are documented sufficiently frequently following childhood interpersonal trauma to merit further scientific and clinical study. Despite overlapping with regard to problems with concentration and

hyperactivity, ADHD and PTSD appear to be distinct (although often comorbid) syndromes, and exposure to interpersonal trauma has not been found to be a consistent risk factor for ADHD (Ford & Connor, 2009). This raises the possibility for future study that children's attentional and arousal regulation problems associated with victimization may be differentiable from ADHD based on the involvement of dissociation in posttraumatic sequelae but not in ADHD.

Studies examining the relationship between cognitive functioning and childhood victimization have relied upon neuropsychological tests and experimental paradigms (Ayoub et al., 2006; Nolin & Ethier, 2007; Pine et al., 2005; Porter, Lawson, & Bigler, 2005; Rieder & Cicchetti, 1989; Savitz, van der Merwe, Stein, Solms, & Ramesar, 2007). Rieder and Cicchetti (1989) found that, compared to nonmaltreated children, maltreated children showed poorer executive functioning even in emotionally neutral contexts. Executive functioning declined among maltreated children in contexts that primed for aggression. Porter et al. (2005) found that abused children performed less well on neuropsychological tests that assessed attention and concentration. Pine et al. (2005) found that physical abuse severity was associated with attention biases away from threatening stimuli, indicating that emotional overload occurs in response to material only tangentially related to trauma. Nolin and Ethier (2007) examined attention and cognition in physically abused or neglected children. Compared to a control group, the abused or neglected group showed disturbances of auditory attention, response set, and visual-motor integration. With respect to studies of cognitive capacities, Ayoub et al. (2006) found that maltreated children were less able to problem solve as compared to their nonmaltreated peers and that interpersonal trauma severity predicted the complexity of problem-solving capabilities. Diminished general cognitive capacities have been documented by several other studies with victimized children. For example, Savitz et al. (2007) found that sexual abuse severity was associated with poorer memory performance. Taken together, these studies document a clear tendency toward disruption in the maltreated child's ability to maintain attention and integration of cognitive functions that may be manifested in generalized impairment, as well as in deficits that are triggered by reminders of victimization.

Distortions in Attributions

Children exposed to interpersonal trauma often have distorted attributions about themselves and the world that may set the stage for globalized shame and guilt, a negative cognitive style, distorted locus of control, and poor self-efficacy (Bolger, Patterson, & Kupersmidt, 1998; Burack et al., 2006; Daigneault, Hébert, & Tourigny, 2006; Gibb & Abela, 2008; Kim & Cicchetti, 2006; Valentino, Cicchetti, Rogosch, & Toth, 2008). For example, Bolger et al. (1998) and Turner et al. (2010a) found that abuse or victimization severity and chronicity predicted children's problems with self-esteem. Kim and Cicchetti (2006) prospectively examined self-esteem in 251 maltreated and nonmaltreated children. They found that physical and emotional abuse predicted initial levels of self-esteem and decreases in self-esteem over time. Burack et al. (2006) found that maltreated children had lower self-worth than their peers; similarly, Valenti-

no et al. (2008) found that abused children were more likely to recall false-negative information about themselves. Gibb and Abela (2008) found that verbal abuse predicted a negative inferential style in children. Taken together, these data represent a pervasive difficulty with understanding responsibility for one's own behavior and the behavior of others in maltreated children. Although a poor sense of self-worth and self-efficacy is a symptom worthy of clinical attention in and of itself, it sets the stage for problematic interactions with others and worse mental health over time. Self-blame and poor self-worth may decrease the likelihood of engaging in self-protective behavior, which may in turn increase psychopathology. For example, Daigneault et al. (2006) found that poor self-esteem in maltreated children was a risk factor for adolescent psychopathology.

Interpersonal Difficulties

Interpersonal difficulties in children following abuse or neglect may include disrupted attachment styles, difficulties with trust, low interpersonal effectiveness, diminished social skills, inability to understand social interactions, poor perspective-taking abilities, expectations of harm from others, and poor boundaries (DePrince, Chu, & Combs, 2008; Elliott, Cunningham, Linder, Colangelo, & Gross, 2005; Kernhof, Kaufhold, & Grabhorn, 2008; Kim & Cicchetti, 2004; Perlman, Kalish, & Pollak, 2008). Children who are exposed to abuse are at risk for the additional victimization of witnessing domestic violence (Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008; Shen, 2009; Turner, Finkelhor, & Ormrod, 2010b). Exposure to domestic (particularly interparental) violence has been shown to increase the risk and severity of internalizing, externalizing, relational, academic and vocational, and legal problems in childhood, adolescence, and adulthood (Ford et al., 2008; Graham-Bermann & Seng, 2005; Gregory, Caspi, Moffitt, & Poulton, 2006; Johnson & Lieberman, 2007; Luthra et al., 2009; Schechter et al., 2007; Shen, 2009; Ybarra, Wilkens, & Lieberman, 2007). These findings have been drawn from both self-report studies and experimental paradigms. Given the central role that attachment appears to play in developing socioemotional skills, it stands to reason that children who have experienced direct assaults to their caregiving system (e.g., directly in the form of maltreatment or indirectly as witnesses to domestic violence) would experience further disruptions in social development.

Disruptions to the attachment and caregiving system also may occur as a tertiary indirect result when family conflict or dysfunction, emotional or behavioral health problems, or maltreatment leads children to be removed from their homes and families. A study of 772 maltreated children two to three decades later having been placed out of the home increased the risk of being arrested as an adult (DeGue & Spatz Widom, 2009). However, the instability of placements—which would be likely to increase the disruption in the development of secure attachment working models—was a unique risk factor. Correspondingly, in a study of 397 children in residential treatment for serious emotional disturbance, multiple (but not single) out-of-home placements were a more consistent correlate of externalizing problems and psychosocial impairment than whether the child had a history of documented sexual or physical abuse (Ford et al., 2009). Multiple out-of-home placements also were

the only correlate of internalizing problems, which were unrelated to abuse.

Other studies have documented social interaction difficulties in maltreated children, such as interpersonal conflict and poor social skills. In a sample drawn from the National Youth Survey, Elliott et al. (2005) found that exposure to interpersonal trauma predicted social isolation in children. Experimental paradigms have documented cognitive styles and schemas, which may influence social behavior in maltreated children. Perlman et al. (2008) found that maltreated children attributed sadness to both positive and negative social situations, which may disrupt their abilities to successfully engage with others. DePrince et al. (2008) found that maltreated children showed errors in judgment for interpersonal reasoning situations, which may lead to inappropriate or odd social behavior and social rejection. Burack et al. (2006) found that maltreated children had more difficulties with social perspective-taking, which may generate a defensive interpersonal style that tends to lead to conflicted relationships. Thus, victimization may lead to difficulties with interpersonal judgment and to externally imposed disruptions in relationships with caregivers, which can create problematic lifelong relational trajectories resulting in homelessness (Padgett, Hawkins, Abrams, & Davis, 2006) or criminality (DeGue & Spatz Widom, 2009).

Co-occurring Symptoms Following Childhood Interpersonal Trauma

Childhood victimization, particularly when it involves multiple forms of interpersonal trauma (i.e., poly-victimization or complex trauma), thus has been consistently found to be associated with complex combinations of symptoms and biopsychosocial impairments (Anda et al., 2007; Briere, Kaltman, & Green, 2008; Cloitre et al., 2009; Finkelhor et al., 2009; Ford et al., 2009; Ford, Elhai, et al., 2010; Ford, Fraleigh, Albert, et al., 2010; Ford, Fraleigh, & Connor, 2010). Researchers therefore have inquired whether the seemingly disparate sequelae of childhood victimization tend to co-occur or represent independent phenomena. A number of studies have examined the appearance of a broad array of symptoms within a single sample (Bailey, Moran, & Pederson, 2007; Bradley, 1986; Lange, Kracht, Herholz, Sachsse, & Irle, 2005; Lau, Liu, Cheung, Yu, & Wong, 1999; Spinazzola et al., 2005; Teisl & Cicchetti, 2008). In an early study, Bradley (1986) found decreased cognitive functioning, poor social competence, and oppositional behavior co-occurring in maltreated children. Lau et al. (1999) examined the physical abuse outcomes in 3,355 adolescents and found an increased incidence of poor physical health, poor interpersonal relationships, and increased impulsive risk-taking behavior. Spinazzola et al. (2005) found that affect dysregulation, inattention, poor self-image, and poor impulse control all were prevalent in over half of their sample, indicating that these symptoms co-occur. Teisl and Cicchetti (2008) examined the impact of physical abuse on domains of functioning on children. Children with histories of interpersonal trauma showed difficulties with cognitive processing, affect regulation, and aggressive cue interpretation compared to nonmaltreated peers. Bailey et al. (2007) found difficulties with self-regulation, interpersonal relations, attributions, and cognition in a sample of 62 at-risk youth. The maltreated group showed an increased incidence of self-harm, interpersonal conflict, identity confusion, and dissociation. Other

researchers have documented similar symptom clusters in maltreated children (Briscoe-Smith & Hinshaw, 2006; Kisiel & Lyons, 2001; Tarren-Sweeney, 2008; Tsuboi, 2005).

Furthermore, outcomes of childhood interpersonal trauma have been the subject of several meta-analytic investigations (Evans, Davies, & DiLillo, 2008; Kitzmann, Gaylord, Holt, & Kenny, 2003; Noll, Shenk, & Putnam, 2009). Evans et al. (2008) meta-analyzed the effects of domestic violence on children across 60 studies and found a moderate effect size for both internalizing and externalizing symptoms. Kitzmann et al. (2003) found that witnessing domestic violence was significantly related to affective disturbances, negative worldviews, externalizing behavior and aggression, and social problems.

Several studies have directly examined whether the symptom clusters associated with interpersonal trauma are interrelated (Praver, DiGiuseppe, Pelcovitz, Mandel, & Gaines, 2000; Rogosch & Cicchetti, 2005; Shapiro, Leifer, Martone, & Kassem, 1992; Shields & Cicchetti, 1998). Shapiro et al. (1992) found that cognitive disturbance, interpersonal disruptions, and oppositional behavior were interrelated in maltreated children. A study by Shields and Cicchetti (1998) examined the interplay of aggression, attention, and emotion regulation in 228 children with and without interpersonal trauma histories. Maltreated children were more likely to show aggressive behaviors, attention deficits, dissociation, emotion dysregulation and lability, and socially inappropriate behavior. Attention and emotion dysregulation placed maltreated children at increased risk for aggressive behavior. Praver et al. (2000) interviewed 208 children categorized by intrafamilial trauma, extrafamilial trauma, combined trauma, or no trauma and found that children with intrafamilial and combined trauma had elevated symptoms across all proposed diagnostic domains. Their sample showed strong internal consistency among symptoms in maltreated children. Rogosch and Cicchetti (2005) demonstrated that symptoms of affect and behavior dysregulation, attention or consciousness, attributions and schemas, and interpersonal conflict were strongly intercorrelated among maltreated children. In particular, maltreated children were likely to present with the following interrelated symptoms: aggression, lability, negative affect, self-injury, inattention, decreased self-worth, and high interpersonal conflict.

Biological Correlates of Symptoms Commonly Occurring in Maltreated Children

To date, several studies have examined biological abnormalities in maltreated children and adults maltreated as children (Bevans, Cerbone, & Overstreet, 2008; Curtis & Cicchetti, 2007; De Bellis et al., 2002; Ito, Teicher, Glod, & Ackerman, 1998; Ito, Teicher, Glod, & Harper, 1993; King, Mandansky, King, Fletcher, & Brewer, 2001; Linares et al., 2008; Taylor, Eisenberger, Saxbe, Lehman, & Lieberman, 2006; Tupler & De Bellis, 2006; Weems & Carrion, 2007). De Bellis et al. (2002) found decreased volume in the corpus callosum, prefrontal cortices, and temporal lobe and increased volume in the superior temporal gyrus in maltreated children with PTSD as opposed to those without PTSD. Age of onset and duration were significantly correlated with brain volume in those areas. Consistent with these findings, a study of women with histories of childhood abuse found that they had decreased volumes in particular areas of the corpus callosum, although not

as widely as was found for children (Kitayama et al., 2007). Thus, central nervous system (CNS) alterations because of abuse in childhood may persist into adulthood albeit in modified or attenuated forms because of maturation or adaptation.

In studies that did not focus on specific diagnoses, maltreatment, sexual abuse, parental verbal abuse, and harsh corporal punishment have been found to be associated with numerous structural and functional alterations in the brain and neuroendocrine systems. Maltreated children have been found to have volumetric reductions in the corpus callosum left neocortex, hippocampus, and amygdala (Teicher et al., 2003). Young adult women who experienced sexual abuse, compared to matched controls, had reduced hippocampal volumes if the abuse occurred in early childhood or preadolescence, reduced corpus callosum volumes if the abuse occurred in middle childhood, and reduced prefrontal cortex volumes if the abuse occurred in adolescence (Andersen et al., 2008). Similarly, studies comparing women diagnosed with PTSD, depression, borderline personality disorder, and dissociative identity disorder who had childhood sexual abuse histories versus matched controls found evidence of reduced hippocampal (and in some cases, amygdalar) volumes (Bremner, Vithilingam, Vermetten, Southwick, et al., 2003; Schmahl, Vermetten, Elzinga, & Bremner, 2003; Vermetten, Schmahl, Lindner, Loewenstein, & Bremner, 2006; Vythilingam et al., 2002). The evidence of reduced hippocampal volumes is consistent with findings by Weems and Carrion (2007) that cortisol elevations related to childhood interpersonal trauma predicted hippocampal volume reduction over time. Women with childhood sexual abuse histories also have been shown to have reduced gray matter in the visual cortices (Tomoda, Navalta, Polcari, Sadato, & Teicher, 2009). Considering victimization more broadly, parental verbal abuse has been found to be associated with reduced integrity of neural integrity (white matter tract anisotropy) in young adulthood (Choi, Jeong, Rohan, Polcari, & Teicher, 2009). Harsh corporal punishment has been found to be associated with reduced gray matter volumes in the medial and dorsolateral prefrontal cortices and anterior cingulate (Tomoda, Suzuki, et al., 2009).

With regard to functional alterations, Ito et al. (1993) found that abused children had left hemisphere EEG abnormalities in anterior, temporal, and parietal areas. Taylor et al. (2006) found that children who experienced harsh or cold parenting showed decreased amygdala activation during an emotion observation task and a strong relationship between amygdala activation and right ventrolateral prefrontal cortical areas during an emotion labeling task, which indicates poor inhibition of the amygdala. Curtis and Cicchetti (2007) found that maltreated children categorized as nonresilient had decreased left hemisphere activation when compared to resilient maltreated children and decreased left parietal activity compared to nonmaltreated children. EEG asymmetries were associated with observed emotion regulation.

Similarly, neuroendocrine changes have been documented in the aftermath of childhood interpersonal trauma. Bevans et al. (2008) found that exposure to childhood trauma was related to alterations in diurnal cortisol variation. Young children who experienced abuse had lower cortisol than their nonabused peers (King et al., 2001; Linares et al., 2008). Studies of women with childhood sexual abuse histories have found similar neuroendocrine abnormalities (Bremner, Vermetten, & Kelley, 2007;

Bremner, Vithilingam, Anderson, et al., 2003; Bremner, Vythilingam, Vermetten, et al., 2003).

Although biological findings have not been consistent, they do indicate a possible broad array of disruptions in the development of neuroanatomical structures and functions following maltreatment. Several studies have examined the relationship symptoms to biological changes in maltreated children and adults who were maltreated as children (Choi et al., 2009; Cicchetti & Rogosch, 2001, 2007; Hart, Gunnar, & Cicchetti, 1995; Murray-Close, Han, Cicchetti, Crick, & Rogosch, 2008; Teicher, Samson, Polcari, & McGreenery, 2006). Murray-Close et al. (2008) found that maltreatment experiences moderated a relationship between blunted diurnal cortisol and aggression in children. Cicchetti and Rogosch (2007) found that lower morning cortisol was related to decreased resilience and increased affect dysregulation in maltreated children. Hart et al. (1995) found that maltreated children had blunted cortisol reactivity, which was in turn related to lower social competency. Cicchetti and Rogosch (2001) found that maltreated children with internalizing problems and coexisting internalizing and externalizing problems had elevated cortisol compared to nonmaltreated children. Consistent with these neuroimaging and neuroendocrine findings, Teicher et al. (2006) found that either parental verbal abuse or witnessing domestic violence, and particularly their combination, was as strongly or more strongly associated with emotional dysregulation consistent with malfunction of the limbic system and problems with depression, anxiety, and hostility than incest or extrafamilial childhood sexual abuse.

Studies of other forms of psychopathology following interpersonal trauma have found that neurobiological changes may be more specific to childhood abuse than to any particular form of psychopathology (De Bellis & Kuchibhatla, 2006). In a sample of children with PTSD, De Bellis and Kuchibhatla (2006) found that maltreated children had decreased cerebellar volumes, which were also associated with earlier and more chronic trauma. Findings held when contrasting the maltreated group to a nonmaltreated group with generalized anxiety disorder.

Effects of Childhood Interpersonal Trauma Exposure on Treatment

An examination of the treatment literature can shed further light on whether the symptoms that are the sequelae of childhood interpersonal trauma may constitute a syndrome that is distinct from existing psychiatric diagnoses. If this is the case, one might expect that victimized children or adults with histories of childhood interpersonal trauma would respond more poorly to treatments that are designed to address existing diagnoses without ameliorating posttraumatic adaptations. On the other hand, the use of trauma-focused interventions with victimized children or adults with histories of childhood interpersonal trauma should be more efficacious than diagnosis-specific treatments across a range of psychiatric diagnoses.

Childhood Victimization as a Negative Prognostic Factor for Psychiatric Treatments

Pavuluri et al. (2006) examined responses to lithium treatment in a sample of youth diagnosed with bipolar disorder. History

of physical or sexual abuse predicted treatment nonresponse. In a sample of children referred for intervention, Lau, Liu, Cheung, Yu, and Wong (2003) found that, compared to non-maltreated children, children with histories of interpersonal trauma were more likely to prematurely terminate therapy and show continued externalizing behaviors 2 years after termination. Jacobs et al. (2008) found that in a sample of children participating in a school-based intervention, nonresponders were more likely than responders to have experienced sexual abuse and to have comorbid diagnoses. Grella and Joshi (2003) found that maltreated adolescents fared poorer than their nonmaltreated peers in substance abuse treatment that was not trauma-focused. Jaycox, Ebener, Damesek, and Becker (2004) found that, compared to adolescents with PTSD and adolescents with no history of interpersonal trauma, trauma-exposed adolescents who were not diagnosed with PTSD were more likely to prematurely terminate substance abuse treatment. One possible explanation for this finding is that adolescents with PTSD received interventions that addressed traumatic stress symptoms as well as substance abuse. Consistent with these findings, Ford and colleagues (2007) found that adults reporting problems with affect dysregulation, dissociation, and disturbed interpersonal functioning had a poorer response to substance abuse treatment than other substance-abusing adults who did not report those symptoms.

Treatment Outcomes of Maltreated Children With Trauma-Informed Interventions

Even when not diagnosed with PTSD, trauma-exposed children may fare well when provided with trauma-informed interventions (Becker-Weidman, 2006; Copping, Warling, Benner, & Woodside, 2001; Dozier et al., 2006; Ford, Steinberg, Hawke, Levine, & Zhang, in press; Greenwald, 2002; Timmer, Urquiza, & Zebell, 2006). Copping et al. (2001) found that among children who experienced childhood interpersonal trauma, an intervention that targeted trauma reactions and attachment had improvements in DTD symptoms. Soberman, Greenwald, and Rule (2002) found symptom improvement using trauma-focused EMDR in a sample of boys with conduct disorder. The group with standard care showed only minimal improvement. In an examination of interventions for reactive attachment disorder, Becker-Weidman (2006) found that their entire sample ($N = 64$) had histories of severe interpersonal trauma, but that symptoms of the sequelae of victimization, such as attention, social, behavioral, cognitive, and internalizing problems, improved during an intervention that focused on resolving trauma-related attachment disruptions. Dozier et al. (2006) found that an intervention that targeted attachment and self-regulation in maltreated toddlers resulted in improved cortisol and behavior compared to maltreated children in a control intervention condition. Ford et al. (in press) found that delinquent girls showed more improvement on PTSD and anxiety symptoms, trauma-related beliefs about self and the world, and emotion regulation capacities, if they received a therapy addressing posttraumatic emotion dysregulation (compared to receiving a supportive client-centered control therapy).

Can the Effects of Symptoms Associated With Childhood Victimization be Accounted for by Any Existing DSM-IV Diagnosis?

Although multiple psychiatric diagnoses have overlapping symptoms (e.g., anxiety and depression may both feature psychomotor agitation), each diagnosis generally manifests with a unique constellation of symptoms. If this is the case with the sequelae of childhood interpersonal trauma, those symptoms may overlap with symptoms constituting existing diagnoses but should be largely distinct from the symptoms of any existing psychiatric diagnosis.

The disorder that shares the most overlap with the sequelae of childhood victimization is PTSD. Associated features of PTSD, which include dissociation and survivor guilt, largely describe the sequelae of childhood victimization. Hyperarousal in PTSD overlaps with affect and impulse dysregulation; however, PTSD-related hyperarousal does not include affect dysregulation around shame and general affect. Furthermore, hyperarousal in PTSD differs from impulsivity seen in the sequelae of childhood victimization in that risky or hypervigilant behaviors do not function as a means of self-soothing, as they are hypothesized to following childhood maltreatment. Although people with PTSD may experience interpersonal difficulties as a result of their PTSD symptoms, a long-standing insecure attachment style and distorted perception of others as found in childhood victimization research does not characterize PTSD.

Given that a complex trauma diagnosis features alterations in attention, consciousness, and cognition as key symptoms, ADHD overlaps with symptoms seen in victimized children. ADHD is similar to childhood victimization symptoms in that chronic dissociation found in the aftermath of childhood trauma shares features with inattention in ADHD; similarly, risk-taking and dysregulation after childhood maltreatment share similarity with hyperactivity and impulsivity in ADHD. However, these two syndromes differ in the nuances of these shared symptoms. For example, although a dissociative child may have difficulty attending to a classroom setting, the sense of depersonalization, derealization, and freeze behavior that characterize dissociation differ from the general deficit in focus and attention shifting of a child with ADHD. Indeed, trauma-exposed children are distinguished from ADHD-diagnosed children without trauma exposure on the basis of dissociation (Reyes-Perez, Martinez-Taboas, & Ledesma-Amador, 2005). Whereas a child with ADHD may engage in risky behavior through dysregulated impulses, a victimized child may engage in impulsive or risky behavior because of affective instability and attempts to self-soothe. Outside of these overlapping symptoms, ADHD diverges from interpersonal victimization sequelae in several significant ways. ADHD is not characterized by affective, interpersonal, or somatic dysregulation, which characterizes victimized children. Inattention and hyperactivity in ADHD are not thought to result from emotional distress, as they may in a maltreated sample. Although self-esteem may be impacted as a result of ADHD, poor self-schema, identity development, and negative expectations of caregivers are not core features of ADHD, as they are in maltreated children. Furthermore, maltreated children may have presentations that alter drastically,

appearing impulsive and hyperaroused in one minute and withdrawn and flat in another.

Nonetheless, diagnoses of ADHD are more frequent in survivors of interpersonal trauma (Briscoe-Smith & Hinshaw, 2006; Davids & Gastpar, 2005; Endo et al., 2006; Husain, Allwood, & Bell, 2008; Mulsow, O'Neal, & Murry, 2001; Weinstein, Staffebach, & Biaggio, 2000). Given the prevalence of ADHD in environments where community trauma is common (Ford, Goodman, & Meltzer, 2004; Heiervang et al., 2007; Luna, 2006; Perry-Burney, Logan, Denby, & Gibson, 2007), the dysregulated affective and behavioral patterns found in ADHD following interpersonal trauma may be better conceptualized as one facet of an adaptation to extreme stress. This distinction may be particularly relevant when inattention appears to arise from dissociation and impulsivity or hyperactivity arises from affective dysregulation.

The impulsivity, affect dysregulation, and breaks with reality found in bipolar disorder share some overlap with the sequelae of childhood victimization. However, the impulsivity associated with bipolar disorder does not share the tension-reduction goal of impulsive risk-taking found in the aftermath of violence. The affect dysregulation associated with even rapid-cycling bipolar disorder occurs on a much slower time course than the lability and moment-to-moment state shifts expected in traumatized children. Similar to depression, the psychotic symptoms associated with bipolar disorder are mood-congruent and not characterized by the fragmentation, depersonalization, and derealization associated with dissociative states. Whereas manic states are characterized by grandiosity, the symptoms associated with maltreatment are characterized by a sense of the self as damaged or defective. Victimized children are not characterized by increases in goal-directed behavior or decreased need for sleep (although other sleep disturbance may be present) found in bipolar disorder. Finally, the symptoms associated with childhood victimization are characterized by impaired interpersonal functioning and altered expectations of others, which are not expected in bipolar disorder.

Although a substantial proportion of children are broadly symptomatic and impacted in multiple domains of functioning, it is important to note that the impact of trauma may be circumscribed. For example, some children may develop separation anxiety, but do not develop more general problems with attachment or interpersonal relationships. Other children may develop aggressive behavior problems, but function well academically. Unfortunately, because the *DSM* does not make note of etiology, children with circumscribed pathologies may suffer from the same fate as their poly-symptomatic peers: Their symptoms are viewed as incidental to their life histories. That trauma's impact may be broad should not overshadow the needs of children more circumspectly impacted. It is equally important to acknowledge that some children may never develop pathological symptoms; however, resilience is not orthogonal to pathology, and the two may often coexist in surprising and heartening ways. The goal of this review is to highlight the reality that many poly-symptomatic children's needs are overlooked by current diagnostic approaches. A co-occurring symptom presentation is one of many manifestations of pathology and one possible, if common, posttrauma trajectory.

Conclusions and Recommendations

The available evidence suggests that the sequelae of exposure to childhood victimization or interpersonal trauma may constitute the basis for a distinct new psychiatric diagnosis or, perhaps, a construct or framework within which to research this topic. Therefore, further research is needed to systematically develop and test the validity and clinical utility of a new diagnosis. A diagnosis based upon exposure to developmentally adverse interpersonal trauma, victimization, and neglect during childhood has the potential to alert clinicians to the influential role of childhood trauma in psychopathology (Ford, 2005; van der Kolk, 2005). These symptoms appear to be interrelated empirically, distinct from PTSD, and to have logical biological correlates. With respect to biological data, childhood interpersonal trauma has documented associations with structural and functional abnormalities in CNS areas and neurohormonal systems representing key pathways for the regulation of consciousness, affect, impulse, sense of self, and physical awareness—that is, precisely the aspects of functioning that are consistently found to be impaired in victimized children and adults who were victimized in childhood. The treatment outcome literature lends preliminary, but consistent, additional credence to both the specificity and utility of a complex trauma diagnosis. To the extent that victimized children with diagnoses such as conduct disorder, bipolar disorder, and ADHD do not respond as well to disorder-specific treatments as other children with those diagnoses and do respond to trauma-focused interventions addressing the core disturbances of affect dysregulation, attention and consciousness, interpersonal skills, and attributions and schemas, a new diagnosis could enhance treatment selection and outcomes for this difficult-to-treat cohort.

Much more than a scientific taxon, psychiatric diagnoses guide the development of interventions, insurance reimbursement, and scientific inquiry in the mental health fields. According to the *DSM-IV*, a mental disorder is

conceptualized as a clinically significant behavior or psychological syndrome or pattern that occurs in an individual and is associated with present distress or disability or with a significantly increased risk of suffering death, pain, disability or an important loss of freedom.... Whatever its original cause, it must currently be considered a manifestation of a behavioral, psychological or biological dysfunction in the individual (xxxi).

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 comorbid 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. On the other hand, a diagnosis based upon the interrelated sequelae of childhood victimization could reduce diagnostic confusion and enhance the outcomes by promoting a targeted treatment approach focused on posttraumatic biopsychosocial dysregulation.

We hope that specific research recommendations encourage the field toward action, as the agenda required to address this topic is lengthy. In particular, research is needed to determine (a) whether victimization-related symptoms are particular to childhood interpersonal trauma or might also apply to some types of extreme victimization experienced in adulthood (e.g., torture, genocide) and to noninterpersonal traumatic stressors such as chronic life-threatening illness or loss of family, home, and community in the wake of disasters; (b) whether disturbances in the child's development of attachment security that are nonviolent, such as severe neglect or the death or permanent loss of a primary caregiver, result in similar symptoms; (c) whether and how these symptoms originate in sensitive developmental periods (Andersen et al., 2008) and evolve as alterations in normal developmental trajectories during childhood and throughout the subsequent life span; (d) how these symptoms are linked specifically to biological alterations including genetic vulnerability and resilience markers as well as CNS and peripheral bodily structures and processes; and (e) how resilience is fostered. Many children who experience complex trauma are highly resilient, but the mechanisms of their resilience and the protective factors that increase their likelihood of resilience have not been sufficiently specified or studied; Ungar (2011) provided an excellent framework that should be applied to complex trauma. With regard to clinical utility, it will be important to determine how these symptoms are viewed by clinicians and how they empirically perform in scientifically sound clinical assessments, including their structure and interrelationships, temporal stability or patterns of change, convergent and discriminant validity, and comorbidity related to existing psychiatric diagnoses, predictive utility for both developmental and treatment outcomes, and efficiency and acceptability for use in real-world clinical practice.

Critics will be quick to note that adding a new diagnosis to the *DSM* may not help the problem of continuous versus categorical diagnoses and the flaws inherent in such a system. Research suggests the need for the development of a construct, *developmental posttraumatic adaptation*, 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 developmental posttraumatic adaptation. However, viewing the sequelae of complex trauma as an array that may form one or more continuous variables will lead to research on the nature and validity of it as a construct (or a collection of related constructs). Until those studies develop a robust evidence base, some diagnosis will need to be defined and used clinically based on the criterion of symptoms that cause impairment to develop and validate treatments for children who are impaired as a result of complex trauma exposure (consistent with suggestions by Taylor, 2011). The construct of developmental posttraumatic adaptation is consistent with a transactional theoretical framework in which psychological adaptations (e.g., Calvete & Orue, 2011) to aspects of the environment that are modifiable are considered as potential contributors to (e.g., neighborhood violence) or buffers against (e.g., community cohesion) both exposure to interpersonal trauma and its adverse sequelae (see, e.g., Gapen et al., 2011). A complex trauma framework also is consistent with a more nuanced

understanding of the impact of different types of exposure to trauma (Reid-Quinones et al., 2011) and individual differences in exposure and reactions to trauma (Voisin, Neilands, & Hunicutt, 2011). Rutter's (2011) proposal of a separate stress disorders domain, including attachment disorders, is consistent with the research evidence reviewed and importantly expands the scope of sequelae from anxiety symptoms to fundamental alterations in self and relational phenomena.

Paradoxically, a diagnosis that would specifically describe complex trauma may help to halt the diagnosis-creep phenomenon that others have noted, for example, with juvenile bipolar disorder and ADHD. A complex trauma diagnosis is intended to reduce pathologizing of complex trauma survivors, who currently often are unduly pathologized by being labeled with many diagnoses that can become a source of chronic stigma. However, the goal is to advance research and clinical work, rather than the "reification of diagnosis" (Hyman, 2010).

This pursuit is an imposing agenda that will require a coordinated series of studies over many years, but the cost and efforts appear to be well warranted in light of the epidemic need for effective ways to help victimized children before they (and their families, communities, and society) suffer irreparable damage to their lives on top of the inherently severe harm caused by the emotional wounds of interpersonal trauma.

Keywords: children; interpersonal trauma; childhood victimization; child abuse and neglect; posttraumatic stress disorder; attention-deficit hyperactivity disorder

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