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Invited Testimony: Senate Committee on Indian Affairs
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Biography: Rick VandenPol has been a Professor at the University of Montana for 33 years, tenured in the departments of Psychology and Education. For the past 14 years he has served as Principal Investigator of the National Native Children's Trauma Center. That Center, a member of the National Child Traumatic Stress Network, is the only federally-funded (SAMHSA/NCTSI) Childhood Trauma Treatment and Adaptation Center charged with disseminating information on childhood trauma in Indian Country throughout the United States.

Disclaimer: Faculty members of the University of Montana are obligated to make public their professional conclusion and to explicitly note that such conclusions of individual conclusions and do not necessarily reflect the official policy of the University of Montana, the MUS Board of Regents, or any federal agency who supports sponsored research and service grant activities.

Finding 1 Child traumatic stress is similar to adult post traumatic stress disorder as seen in combat veterans. However, it manifests differently due to human development. Early exposure to adverse childhood experiences (victim of violence, witness to violence, loss of loved one) is associated with negative public health outcomes including elevated morbidity, mortality, suicide, chemical dependence, marital dissatisfaction, and unemployment).

Finding 1.1 Adverse childhood experiences are associated with visible changes in brain anatomy.

Finding 1.2 Adverse childhood experiences are treatable, and early effects of adversity can be mitigated or eliminated with effective evidence-based treatment.

Source: Exhibit I

Citation: VandenPol, R. and Manning, R. (2015). Child Abuse and the Emergence of the Diagnosis of Developmental Trauma. In J. Jones (Ed.)(*Physician's Guide to Mental Health Disorders in Childhood Maltreatment.*) St. Louis, MO: STM Learning

Finding 2 Adverse childhood exposure and symptoms of child traumatic stress can be treated effectively and economically. The national resource for such treatment is the National Child Traumatic Stress Network.

Source: Exhibit II. Description of National Child Traumatic Stress Network (handout).

Finding 3 The prevalence of adverse childhood experience and symptoms of trauma appear to be more than 500% higher among some American Indian Tribes.

Source: Exhibit III

Citation: Mary P. Koss, PhD, Nicole P. Yuan, PhD, Douglas Dightman, MPH, Ronald J. Prince, MS, Mona Polacca, MSW, Byron Sanderson, MSW(late), David Goldman, MD. (2003). Adverse Childhood Exposures and Alcohol Dependence Among Seven Native American Tribes. *American Journal of Preventive Medicine*, 25(3), 238–244.

Finding 4 Native youth with symptoms of childhood traumatic stress can be treated effectively by economical interventions delivered in middle schools.

Source: Exhibit IV

Citation: Morsette, A., van den Pol, R., Schuldberg, D., Swaney, G., & Stolle, D. (2012). Cognitive behavioral treatment for trauma symptoms in American Indian youth: Preliminary findings and issues in evidence-based practice and reservation culture. *Advances in School Mental Health Promotion*, 5,1, 51 – 62.

Finding 5 While Native Americans may have higher levels of trauma than other Americans, emerging research suggests that trauma symptoms are more strongly related to loss and bereavement than to violence exposure.

Source: Exhibit V

Citation: Morsette, A. Examining the role of grief in the etiology of Posttraumatic Stress Disorder (PTSD) symptoms in American Indian adolescents (unpublished doctoral dissertation), posted <http://search.proquest.com.weblib.lib.umt.edu:8080/pqdtft/docview/304943105/16CB181678EA49A0P/Q/2?accountid=14593>

Exhibit I: VandenPol, R. and Manning, R. (2015). Child Abuse and the Emergence of the Diagnosis of Developmental Trauma. In J. Jones (Ed.)(*Physician's Guide to Mental Health Disorders in Childhood Maltreatment.*) St. Louis, MO: STM Learning

CHILD ABUSE AND THE EMERGENCE OF THE DIAGNOSIS OF DEVELOPMENTAL TRAUMA*

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KEY POINTS:

1. Trauma is a normal response to an abnormal situation.
2. Developmental trauma resulting from emotional abuse physically injures the brain.
3. The understanding of developmental trauma is rooted in knowledge of posttraumatic stress disorder (PTSD) but grew from the landmark Adverse Childhood Experiences (ACE) Study and the National Child Traumatic Stress Network (NCTSN).
4. Developmental trauma differs from PTSD in that the injury, often inflicted by a caregiver, occurs while the brain is developing and arrests part of that brain development.
5. Traumatic stress is a combination of mental and somatic responses to a perceived threat mediated by the limbic system and the vagus nerve.
6. Interventions for developmental trauma are based on cognitive behavioral therapy but also address somatic elements with relaxation techniques and exposure by recall of the traumatic event.

INTRODUCTION

The understanding of psychological trauma in the development of children builds on earlier research into *posttraumatic stress disorder (PTSD)* in combat survivors. The problem of childhood exposure to multiple traumatic events is different, however, in that it is far more prevalent than most assume and, perhaps most importantly, because it victimizes individuals whose brains are still developing and, as a result, alters that course of development. Psychological trauma in children is not a separate issue from physical head trauma; rather, psychological trauma is simply another way of physically damaging children's brains through child abuse. Frequent co-occurrence of physical and psychological abuse further blurs the distinction.

Many researchers describe PTSD as a failure of recovery because most children and adults exposed to only a single trauma demonstrate transient symptoms and then

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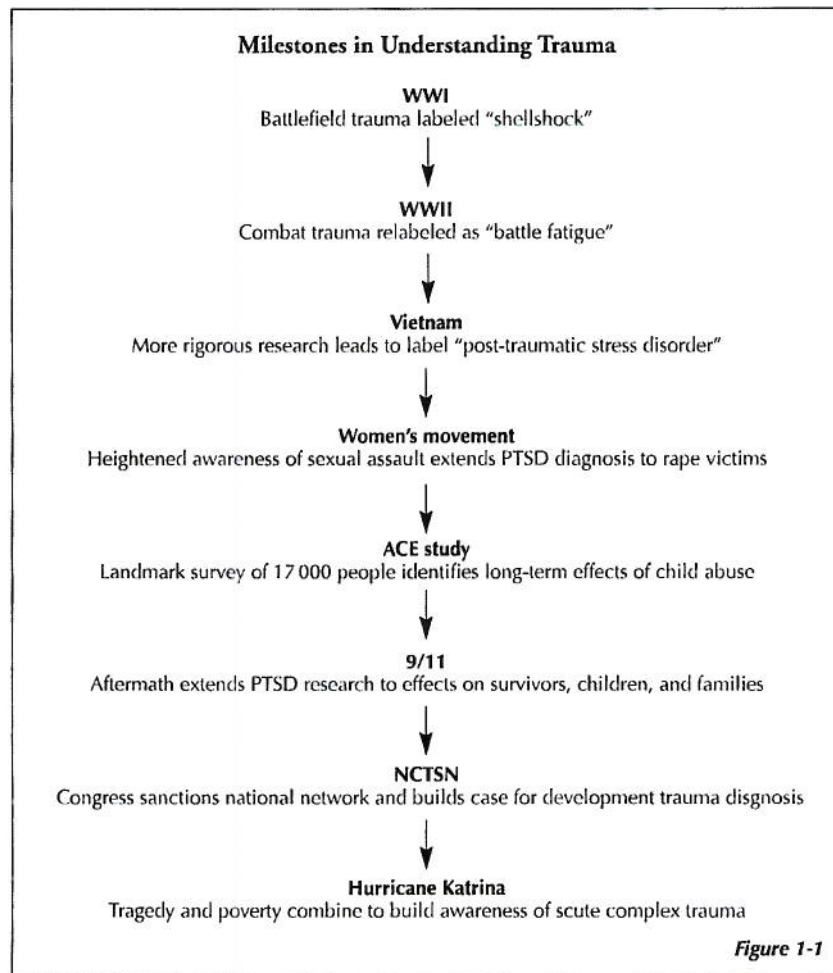
†The authors thank Amy Garret, PhD; Victor Carrion, MD; and their colleagues with Stanford University School of Medicine for sharing and interpreting fMRI images of traumatized youth.

return to their former levels of functioning.^{1,2} PTSD sufferers cannot return to a normal condition and, as a result, remain locked in the moment of trauma. PTSD produces a classic set of symptoms, including flashbacks, re-experiencing traumatic events, nightmares, depression, and suicide. Children who suffer repeated traumatic events, which is typical of child abuse victims, may show some of these symptoms, but PTSD does not adequately describe the cause and effect; this led to the proposal of a new diagnosis of *developmental trauma*. The evidence supporting this shift emerged from nearly two decades of epidemiological research, the efforts of a formal network designated by Congress to study the effects of childhood trauma, and the rapidly increasing capabilities of neuroscience. See **Figure 1-1** for a timeline of major developments in understanding trauma.

ADVERSE CHILDHOOD EXPERIENCES (ACE) STUDY

The foundation of the epidemiological research is the landmark Adverse Childhood Experiences (ACE) study, a continuing project headed by the Centers for Disease Control and Prevention (CDC).³ The ACE study originated in the early 1980s with an intervention for obesity sponsored by Kaiser Permanente, a health maintenance organization based in California. When clinicians noticed that people enjoying success

Figure 1-1.
Conceptualizing
psychological
trauma:
battleground to
playground.



in their weight reduction tended to drop out of the program and then regain the weight, the clinicians began systematically questioning the dropouts. The questioning produced anecdotal accounts of child abuse, especially sexual abuse, occurring more frequently than the participating physicians had previously thought.

The epidemiological research of child abuse has spawned more than 50 publications,⁴ but through the long history of this body of research, the key findings have produced a remarkably consistent and urgent message. The results claim that:

- Child abuse is more common than generally acknowledged.
- Child abuse is a significant cause of our world's leading social, economic, and public health problems.
- The damage from child maltreatment plagues individual health and well-being for decades, even a lifetime.

A recent ACE publication⁵ concludes that adults who were significantly abused as children die, on average, 20 years earlier than the rest of the population.

As the trend became more apparent, Robert Anda, an epidemiologist with the CDC, joined Kaiser Permanente's Vincent Felitti in designing a follow-up questionnaire to measure the effects of child abuse. They called the questionnaire ACE's "affected health." The researchers administered the questionnaire to 17 000 middle-class, educated clients of Kaiser Permanente. It consisted of a simple list of questions concerning the following eight categories of childhood experiences:

- Recurrent and severe physical abuse
- Recurrent and severe emotional abuse
- Contact sexual abuse
- Growing up in a household with an alcoholic or a drug user
- Growing up in a household with a member being imprisoned
- Growing up in a household with a mentally ill, chronically depressed, or institutionalized member
- Growing up in a household with the mother being treated violently
- Growing up in a household with both biological parents being absent

For each "yes" answer, a respondent was given 1 point on his or her ACE score. Fewer than half of the respondents had an ACE score of zero, meaning a majority of this middle-class, employed sample had suffered some form of child abuse, and 7% had a score of 4 or more. These findings speak to issues beyond prevalence. Researchers correlated ACE scores against the 10 leading causes of premature death in the nation. CDC summarizes the findings:

The ACE Score is used to assess the total amount of stress during childhood and has demonstrated that as the number of ACEs increase, the risk for the following health problems increases in a strong and graded fashion: alcoholism and alcohol abuse, chronic obstructive pulmonary disease, depression, fetal death, health-related quality of life, illicit drug use, ischemic heart disease, liver disease, risk for intimate partner violence, multiple sexual partners, sexually transmitted diseases, smoking, suicide attempts, unintended pregnancies.

In addition, the ACE Study has also demonstrated that the ACE Score has a strong and graded relationship to health-related behaviors and outcomes during childhood and adolescence including early initiation of smoking, sexual activity, and illicit drug use, adolescent pregnancies, and suicide attempts. Finally, as the number of ACEs increases, the number of co-occurring or "co-morbid" conditions increases.⁶

The results presented strong correlations between high ACE scores and addictive behaviors, such as smoking, intravenous drug use, and alcohol abuse, all of which have long-term, negative health effects. The researchers, however, normalized their data for these problematic behaviors and found that these addictive behaviors alone did not account for early death and or morbidity; rather, they concluded that child abuse, by itself, was harmful to health.

The data ultimately generate the basis of what qualifies as a paradigm shift in our conception of the human condition, with the following conclusion reached by Felitti:

The current concept of addiction is ill-founded. Our study of the relationship of adverse childhood experiences to adult health status in over 17 000 persons shows addiction to be a readily understandable although largely unconscious attempt to gain relief from well-concealed prior life traumas by using psychoactive materials. Because it is difficult to get enough of something that doesn't quite work, the attempt is ultimately unsuccessful, apart from its risks. What we have shown will not surprise most psychoanalysts, although the magnitude of our observations is new, and our conclusions are sometimes vigorously challenged by other disciplines.

The evidence supporting our conclusions about the basic cause of addiction is powerful and its implications are daunting. The prevalence of adverse childhood experiences and their long-term effects are clearly a major determinant of the health and social well-being of the nation. This is true whether looked at from the standpoint of social costs, the economics of health care, the quality of human existence, the focus of medical treatment, or the effects of public policy.⁷

NETWORK SCIENCE

A second line of research independently provided a closer link to earlier work on PTSD in combat veterans. Bessel van der Kolk, a lead researcher in both PTSD and developmental trauma at the Trauma Center in Boston, worked with veterans in the 1970s and was a part of the research that formally identified and categorized the diagnosis. PTSD itself is not new and had been known as battle fatigue or shell shock in earlier wars.

van der Kolk founded a clinic for the treatment of adult victims with PTSD and anticipated that it would specialize in combat victims and survivors of various catastrophes, such as natural disasters and automobile wrecks; however, he found, that the patients who sought his help for traumatic stress were overwhelmingly victims of domestic violence. His work eventually evolved into the National Child Traumatic Stress Network (NCTSN), sanctioned by Congress in 2000 and funded through the Substance Abuse and Mental Health Services Administration (SAMHSA) of the Department of Health and Human Services (DHHS). NCTSN has two hubs, the Neuropsychiatric Institute at the University of California at Los Angeles (UCLA) and the Duke University Medical Center, that house the network's core data set, a compilation of research by the 60 member centers of the network. The core data set includes research on more than 20 000 children, most of whom are survivors of abuse. NCTSN also includes seven treatment adaptation centers responsible for modifying evidence-based treatments to meet the cultural and developmental needs of diverse populations of children and youth with trauma.

NCTSN's research produced a long list of key findings that paralleled those of the ACE study, helped explain the long-lasting effects of child abuse, and established causal links to explain the correlations that emerged in the ACE study. The formal proposal for the revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM) to include a new diagnostic category of developmental trauma emerged from the NCTSN and was written by van der Kolk; Robert S. Pynoos, codirector of the UCLA center; and 10 other physicians and clinical psychologists in the network.

Much of the NCTSN's work has filled in details that support ACE findings about the spinoff effects of child abuse. For instance, one study in Cook County, Illinois found that more than 90% of the children adjudicated in the juvenile justice system had been abused.⁸ Child abuse is widespread, with one study having found that more than half of the children in a representative national sample had been subject to some sort of physical assault within one year. In that same study, one in eight children were found to have been victims of physical abuse or neglect.⁹

Child abuse presents economic costs to society because it is pervasive and it contributes to a range of problems, including crime, substance abuse, suicide, and poor performance in school. One NCTSN study concluded that annual costs related to child abuse, not including indirect medical costs, amounted to \$103.8 billion nationwide.⁹ The network's research goes beyond establishing a statistical case that the problem exists; it also assembles a conceptual framework for understanding the unique nature of child abuse, which is the core argument for creating a diagnosis separate from PTSD.

Network researchers argued there is a critical distinction between adult PTSD and what those researchers prefer to label "developmental trauma," the parallel problem in children. Adult PTSD victims usually suffer a traumatic response to a single readily identifiable and catastrophic event, such as combat, that occurred while they were adults. Developmental trauma, on the other hand, usually stems from multiple events and clusters of problems that may occur over the course of several years and, more importantly, occur as a child's brain is developing. The critical distinction is that damage caused by developmental trauma interrupts normal brain development.

The proposal for a potential future revision of the DSM summarizes this critical distinction between adult PTSD and developmental trauma in the following core argument:

In fact, multiple studies show that the majority [of abused children] meet criteria for multiple other DSM diagnoses. In one study of 364 abused children, 58% had the primary diagnosis of separation anxiety/overanxious disorders, 36% phobic disorders, 35% PTSD, 22% attention deficit hyperactivity disorder (ADHD) and 22% oppositional defiant disorder. In a prospective study¹⁰ of a group of sexually abused girls, anxiety, oppositional defiant disorder and phobia were clustered in one group, while depression, suicidality, PTSD, ADHD and conduct disorder represented another cluster.

A survey of 1699 children receiving trauma-focused treatment across 25 network sites of the National Child Traumatic Stress Network (NCTSN) showed that the vast majority (78%) was exposed to multiple and/or prolonged interpersonal trauma, with a modal 3 trauma exposure types; less than one quarter met diagnostic criteria for PTSD. Fewer than 10% were exposed to serious accidents or medical illness. Most children exhibited posttraumatic sequelae not captured by PTSD: at least 50% had significant disturbances in affect regulation; attention & concentration; negative self-image; impulse control; aggression & risk taking. These findings [2009] are in line with the voluminous epidemiological, biological and psychological research on the impact of childhood interpersonal trauma of the past two decades that has studied its effects on tens of thousands of children. Because no other diagnostic options are currently available, these symptoms currently would need to be relegated to a variety of seemingly unrelated co-morbidities, such as bipolar disorder, ADHD, PTSD, conduct disorder, phobic anxiety, reactive attachment disorder and separation anxiety.¹¹

The evidence indicates that a cluster of problems in abused children leads to a cluster of outcomes and behavioral problems. The greater the number of incidents and forms of abuse and maltreatment a given child suffers, the greater the number of diagnoses the child is given under existing categories of the DSM.¹² The emerging body of neuroscience supports and even explains this core finding.

TRAUMA IN THE BODY

The proposed diagnosis is called developmental trauma because the injury occurs before a child is 17 years old, while the brain is physically developing. The human birth canal cannot accommodate a fully developed brain, so evolution devised an elegant solution to the problem, analogous to building a ship in a bottle. Genes influence this development, but brains only reach their genetic potential if they are guided by appropriate relationships with other humans, especially caregivers.

Child maltreatment is a breakdown in a child's relationship with caregivers in which caregivers either directly inflict violence and neglect or, due to being traumatized by violence, cannot engage the child in a healthy relationship. Children do not have the cognitive tools to understand or process these threats, which are the key elements to understanding developmental trauma. A child's responses to abuse are largely handled by the *infratentorial brain*, the primitive lower part of the brain that is the only portion fully developed in children and common to humans and the rest of the animal kingdom. The primitive brain delivers a response that is common in all animals, an evolved and necessary response to danger that allows them to survive existential threats.

The only major nerve in the body that leads directly from the brainstem is the *vagus nerve*, the primitive portion of the brain that enervates the body cavity containing all of the major organs. These major organs carry out routine body functions that are largely involuntary responses, such as heart rate and digestion. Similarly, in animals, a response to an immediate threat is also involuntary and telegraphed by the vagus nerve. The human body responds to threats by increasing heart rate and respiration and tensing the muscles, measures designed to deal with threats. The body also takes less obvious steps when confronting a threat, such as shutting down the digestive and immune systems. Both systems are energetically expensive and can be temporarily shut down to channel all available energy to meeting the threat. These responses are mediated by complex biochemistry, especially glucocorticoids and cortisol. Elevated cortisol levels are a reliable indicator of stress in both animals and humans. Cortisol serves a unique function in that it does not trigger the traumatic response but, rather, triggers the body's return to normal after the trauma has passed. Once a threat passes, all of the body's emergency measures need to be cancelled because a living being cannot live for long with a permanently elevated pulse, without digestion or an immune system, or in a permanent state of terror.

The traumatic response is more complex than the elevated cortisol response and involves a chain reaction in the brain and the rest of the body. The traumatic response begins in the amygdala, a central area of the primitive brain, and then stimulates in succession the hypothalamus; the pituitary, through corticotropin-releasing hormone; adrenocorticotropin; and the adrenal gland. Researcher Michael De Bellis summarizes the results of this chain reaction: "This results in tachycardia, hypertension, increased metabolic rate, hypervigilance, and increased levels of epinephrine, norepinephrine, and dopamine. Catecholamines contribute to dilation of pupils, diaphoresis, renal inhibition, and decreases in peripheral blood flow."¹³

Three distinct behavioral characteristics of a traumatic response correspond to this physical response: fight, flight, or freeze. Each response can be adaptive and successful depending on the nature of the threat, the person's or animal's position in the pecking order, and the skills and resources of the person or animal; however, it is important to remember that this traumatic response is a normal response to an abnormal situation. In the case of traumatized children, the abnormal situation becomes routine, ie, the threat is repeated, sometimes daily, and becomes a way of life.

Children lack the resources and developed brains that might allow them to devise solutions to permanently escape threats, so they cope and devote all of their personal resources to daily survival. Meanwhile, their bodies gradually lose the ability to turn off the traumatic response and return to normal; in other words, they enter a permanent state of terror. There are clear and famous examples of diagnosing childhood trauma. Childhood trauma is not diagnosed through psychological screening but, rather, by recording an elevated pulse rate lasting long after immediate danger has passed.

The body's normal response to trauma explains the somatic issues that surface in the lives of adults who were abused as children, as demonstrated in the landmark ACE study. Several issues stem from compromised immune systems. While these issues appear as behavioral and psychological problems in children, they emerge more frequently as somatic issues as children age. In adults, physical problems, such as unexplained neck pain, obesity, and susceptibility to a range of illnesses as a result of compromised immune systems, are observed; however, the behavioral and psychological issues of these children are rooted in the physical damage inflicted by repeated abuse. The brain is probably the most damaged organ in children who experience abuse and domestic violence.

TRAUMA IN THE BRAIN

The implications for brain functioning in the flight, fight, or freeze response include the key neurotransmitters dopamine, epinephrine, and norepinephrine. These neurotransmitters are intimately connected to brain functioning, especially with problems such as substance abuse, depression, and anxiety. Beyond neurochemistry, one can also approach this issue using recent findings of developmental psychology and neurobiology. Infants are born with primitive regions of the brain, such as the infratentorial, already well formed; however, the new brain, the supratentorial region that includes the prefrontal cortex, is largely absent. The region is known as the higher region of the brain because it is physically above the infratentorial region and allows the functioning that makes people uniquely human and social. The supratentorial region controls self-conscious behavior and allows reasoning, self-control, learning, language, and other skills that enable an individual to negotiate by engaging with fellow humans.

Neither the physical dimensions of the prefrontal cortex nor its function are wholly determined by genetics. The neural pathways and the cellular structure of this part of the brain hold the physical record of an individual's relations with his or her social environment. The higher brain is built by relationships, especially early relationships with caregivers, particularly mothers. To a profound degree, interactions with caregivers build a child's brain over the course of the first 17 years of his or her life.¹⁴⁻¹⁶ The neurochemistry outlined above suggests how this process might be disrupted by abusive behavior in social relationships. Neuroimaging is very suggestive of this disruption (see **Figure 1-2**).

Magnetic resonance imaging (MRI) and functional magnetic resonance imaging (fMRI) are recently developed tools that give science profound insights

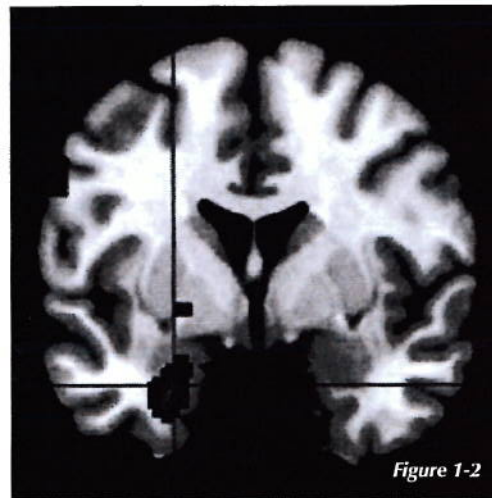


Figure 1-2. fMRI data on abused youths with PTSD shows pronounced activation in the left amygdala and hippocampus (pictured) and lower activation in the dorsolateral prefrontal cortex (not pictured). This activation pattern, the neural response to photographs of angry, fearful, happy, sad, and neutral facial expressions, suggests that abused children have exaggerated fear responses to social cues and deficient responses in regulatory, executive control regions.¹⁷ (Contributed by Amy Garrett, PhD; Stanford, CA.)

into the functioning of the brain and its development. These tools have been directed at the problem of child abuse and have made important findings. A series of studies by De Bellis and colleagues reveal that brain imaging shows a smaller intracranial volume in children with a history of abuse when compared to children with less-troubled histories. Brain volume, which is crucial to processing long-term memory, is reduced in the prefrontal cortex as well as in the corpus callosum and hippocampus in children with histories of abuse.¹³

TREATMENT

Child abuse has existed throughout history, but there has been a lack of proper understanding of its long-term effects until recently, leading to misdiagnoses. These recent findings not only generate new insights into a serious social problem but also provide for potential approaches to treatment. Pinpointing the roots of the problem, in addition to realizations from neuroscience about neurogenesis and neuroplasticity, implies that much of this damage is reversible with proper evidence-based treatment.

The NCTSN recognizes at least 40 evidence-based practices with a proven ability to improve the lives of traumatized children. The first tool toward dealing with this issue is proper diagnosis. The DSM attempted to deal with all traumatic events with the diagnosis of PTSD; however, PTSD is best applied to adults who experience exposure to a one-time event like combat or a natural disaster; therefore, children with a history of abuse often do not meet the criteria for a PTSD diagnosis. Many children suffering developmental trauma are sorted into existing DSM categories, such as bipolar disorder, attention deficit hyperactivity disorder (ADHD), or depression. All of these diagnoses involve medication, many times with serious side effects.

An interesting finding of recent work offers a separate term for developmental trauma: *complex trauma*. The rationale for using the term complex trauma is that it often involves many and varied traumatic events and, therefore, a complex number of causes. The researchers also found that the more complex a trauma history, the more diagnoses a given child would meet under the existing criteria of the DSM.

Nonetheless, researchers have now developed and deployed screening instruments that reliably identify both the existence and severity of trauma in children. This opens the way to treatment that ranges in intensity according to the degree of trauma in and resilience of an individual child.

The suite of available interventions is largely based on cognitive behavioral therapy and rarely involves medication, at least not in the long term. In all of these interventions, there tends to be a key common factor that acknowledges the somatic side of trauma and its effects. Therapists use a variety of devices to help clients remember traumatic events, and these memories can trigger a traumatic response. The therapist then teaches both cognitive and relaxation techniques to help clients process traumatic memories.

Trauma-Focused Cognitive Behavior Therapy (TF-CBT) incorporates psychoeducation about sexual abuse and PTSD; a description of the cognitive behavioral triad, ie, the interrelationships among thoughts, feelings, and behaviors; affect regulation; and relaxation skill training. It typically entails 12 therapeutic sessions. A critical element of TF-CBT is reciprocal inhibition, first described in 1958 by Wolpe in his work with World War II combat veterans.¹⁸ In a classical sense, reciprocal inhibition refers to the prevention, inhibition, or interruption of a conditioned trauma response in the presence of a trauma stimulus, sometimes called a trauma trigger. Reciprocal inhibition can be effected by presenting the trauma stimulus abruptly, eg, implosion therapy or flooding,

or gradually, eg, systematic desensitization. The effectiveness of reciprocal inhibition treatments seems to depend on the patient's exposure to the trauma stimulus while successfully practicing a relaxation skill in lieu of a trauma response. Regardless of the therapeutic regimen, if the therapist terminates the trauma exposure while the patient is in an elevated state of arousal, ie, making a trauma response, instead of during relaxation, the trauma exposure is likely to produce an exacerbation of trauma symptoms. This potential for negative therapeutic consequence, coupled with frequently reported patient discomfort, make trauma exposure one of the more clinically complex and risky mechanisms of cognitive behavioral therapy.

Judith Cohen and colleagues have demonstrated that TF-CBT can reduce trauma symptoms, depression, and anxiety in preschool children (3 to 6 years old) who are victims of sexual abuse and that those outcomes sustain over time.¹⁹ They reported similar results for 7- through 11-year-old children.¹⁹ Esther Deblinger and colleagues provided TF-CBT to children only and TF-CBT to children plus a nonoffending parent and then compared those regimens with standard community care. They described numerous additive benefits when TF-CBT was delivered to children plus parents, including reductions in the children's trauma symptoms, depression, and behavioral problems. These results were maintained at a two-year follow-up.²⁰

While clinic-based CBT has proven to be of great value in treating children with PTSD symptoms, recent research has explored alternatives to clinic-based services. In 2010, Jaycox and colleagues compared completed referral rates for post-Katrina children with trauma symptoms who were randomly assigned to either a clinic- or a school-based CBT. While only 14 of 60 (23%) students referred to clinic-based CBT began treatment, 57 of 58 (98%) children referred to school-based CBT began treatment. The number of children completing treatment was also higher for school-based CBT.²¹

The treatment model used by Jaycox et al is *Cognitive Behavioral Treatment for Trauma in Schools (CBITS)*.²² CBITS is an annualized-group CBT with therapeutic components similar to those of TF-CBT; however, CBITS typically involves 10 sessions rather than 12; is delivered in groups of up to eight students, thus affording economies in scale; and can be delivered by master's-level mental health school staff.

In 2003, Stein et al evaluated CBITS using a randomized delayed treatment comparison design. A total of 125 inner-city middle school students received CBITS either early or late in the school year. With CBITS treatment, both groups showed reductions in PTSD symptoms, depression, and psychosocial dysfunction. The delayed-treatment group showed some symptom reduction prior to CBITS implementation, but symptoms improved further with CBITS treatment.²³

While CBITS offers some enhancements over TF-CBT in terms of rates of completed referrals, rates of treatment completion, and economies of scale, CBITS also has some limits in treating developmental trauma. CBITS incorporates strong mechanisms to maintain confidentiality of group proceedings. It also involves group discussion of trauma etiology that can be uncomfortable or inappropriate when the cause of the trauma is sexual and the peers are adolescents. Thus, the developers of CBITS discourage the use of the treatment with adolescents whose sole trauma cause is sexual abuse; however, since the majority of students with developmental trauma have multiple trauma experiences, it is possible to include a student with a history of sexual abuse in CBITS provided the student identifies one of his nonsexual trauma experiences to work on in group sessions. The 10-session CBITS protocol includes individualized meetings with the adult facilitator, thus, it is possible to promote stimulus generalization of the targeted trauma to the sexual trauma in a private setting.

CONCLUSION

The expanding capabilities of neuroscience and a large body of research conducted by the NCTSN has greatly expanded the understanding of the deleterious effects of child abuse and neglect. The terror associated with abuse triggers a fundamental and primal response in children that is typical of most animals, ie, the self-protective and adaptive trigger to freeze, fight, or flee; however, repeated threats of multiple events typical of child abuse overtax the biochemistry that, in the normal course of events, allows homeostasis and returns the child's arousal state to normal after the threat has passed. This phenomenon in turn interferes with the child's normal physical brain development, potentially laying the foundation for permanent damage. Nonetheless, a more comprehensive understanding of the mechanisms of developmental trauma has helped illuminate successful interventions.

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The National Child Traumatic Stress Network

The National Child Traumatic Stress Network (NCTSN) was created by Congress in 2000 as part of the Children's Health Act to raise the standard of care and increase access to services for children and families who experience or witness traumatic events. This unique network of frontline providers, family members, researchers, and national partners is committed to changing the course of children's lives by improving their care and moving scientific gains quickly into practice across the U.S. The NCTSN is administered by the Substance Abuse and Mental Health Services Administration (SAMHSA) and coordinated by the UCLA-Duke University National Center for Child Traumatic Stress (NCCTS), which guides NCTSN collaborative efforts.



The NCTSN has grown from 17 funded centers in 2001 to 79 currently funded centers and over 100 affiliate (formerly funded) centers and individuals, working in hospitals, universities, and community based programs in 43 states. These grantees and affiliates work to accomplish the NCTSN mission by:

- providing clinical services
- developing and disseminating new interventions and resource materials
- offering education and training programs
- collaborating with established systems of care
- engaging in data collection and evaluation
- informing public policy and awareness efforts

The national impact of the NCTSN is well documented. During the past several years, quarterly estimates from the NCTSN Brief Services Utilization Report indicate that more than 40,000 individuals – children, adolescents and their families – directly benefited from services through this network. Since its inception, the NCTSN has trained almost one million professionals in trauma-informed interventions. Hundreds of thousands more are benefitting from the other community services, website resources, webinars, educational products, community programs, and more. Over 10,000 local and state partnerships have been established by NCTSN members in their work to integrate trauma-informed services into all child-serving systems, such as: child protective services, health and mental health programs, child welfare, education, residential care, juvenile justice, courts, and programs serving military families.

As part of its mission, the NCTSN immediately mobilizes in the aftermath of national crises, including the terrorist attacks in 2001, Hurricanes Katrina, Rita, and Sandy, and school shootings such as those at Virginia Tech and Sandy Hook Elementary School. In this role, the NCTSN deploys staff, provides direct services and training where needed, and disseminates resources locally and throughout the country, supporting the coordinated interagency federal response.

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The continued work of the NCTSN supports the further development of treatment and services to prevent mental health problems among children and families who have experienced trauma and reduce its impact on adult health and productivity. Sustained support for the NCTSN would allow millions more children and families to benefit from the improvements in evidence-based treatment, the expansion of educational opportunities, the development of community and national collaborative partnerships, and the widespread dissemination of public awareness resources.

The NCTSN's website provides a range of resources for professionals and the public about child traumatic stress, including products, fact sheets, training opportunities, and access to the latest research and resources. For more information about child traumatic stress and the NCTSN, visit www.nctsn.org or e-mail the NCTSN Policy Program at policy@nctsn.org.



What is Child Trauma and Child Traumatic Stress?

Child traumatic stress occurs when children and adolescents are exposed to traumatic events and this exposure overwhelms their ability to cope with what they have experienced.

Prior to age 16, two-thirds of children in the U.S. are exposed to a traumatic event, such as:

- physical or sexual abuse
- natural disasters or terrorism
- family or community violence
- sudden or violent loss of a loved one
- refugee and war experiences
- serious accidents or life-threatening illness
- military family-related stressors (e.g., deployment, parental loss or injury)



Not all children experience child traumatic stress after experiencing a traumatic event. With support, many children are able to adapt to and overcome such experiences.

What are the Consequences of Child Trauma?

Children who are exposed to traumatic events may experience a wide variety of consequences that can include intense and ongoing emotional distress, grief, challenging behavioral changes, difficulties with attention, academic failure, nightmares, or illness. For some children, these reactions interfere with daily life and their ability to function and interact with others. These reactions sometimes develop into psychiatric disorders, including posttraumatic stress disorder (PTSD), anxiety, and depression. Traumatic experiences can also worsen preexisting mental health problems and disrupt children's ability to form positive relationships and to handle emotions and behavior.

The cost of these problems is felt not only in human terms, but also in dollars and cents, affecting future generations as well. As an example, the Centers for Disease Control and Prevention recently reported that the total lifetime estimated cost associated with just one year of child maltreatment alone is approximately \$124 billion.

Repeated childhood exposure to traumatic events can affect the brain and nervous system and increase health-risk behaviors (e.g., smoking, eating disorders, substance use, and high-risk sexual behaviors leading to teen pregnancy and sexually transmitted infections). Research shows that child trauma survivors are more likely to have long term health problems (e.g., diabetes and heart disease) or to die at an earlier age. Traumatic stress can also lead to increased use of health and mental health services and increased involvement with the child welfare and juvenile justice systems. Adult survivors of traumatic events may have difficulty in establishing fulfilling relationships, maintaining employment, and becoming productive members of society.

Untreated child traumatic stress contributes to many of the most pressing problems that individuals and communities face, including poverty, crime, low academic achievement, addiction, mental health problems, and poor health outcomes. The cost of these problems is felt not only in human terms, but also in dollars and cents, affecting future generations as well. As an example, the Centers for Disease Control and Prevention recently reported that the total lifetime estimated cost associated with just one year of confirmed cases of child maltreatment alone is approximately \$124 billion.

What Can Be Done To Address the Problem?

Fortunately, there are evidence-based treatments and services that are highly effective for child traumatic stress. However, many children and families face barriers in receiving appropriate mental health care. Improving access to effective evidence-based treatments for children who experience traumatic stress can reduce suffering and decrease the costs of health care.