

**Published by:**

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All issues of the PTSD Research  
Quarterly are available online at:  
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## The Epidemiology of Trauma and Trauma Related Disorders in Children and Youth

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On December 7, 2007, *New York Times* reporter Leslie Eaton published a story – “Many Children Struggling After ’05 Storms” – that opened with a stunning prevalence estimate of the scope of the long-term effect of the hurricanes that hit the US Gulf Coast in 2005. “At least 46,600 children along the Gulf Coast are still struggling with mental health problems and other serious aftereffects of the 2005 hurricanes, according to a new study by the Mailman School of Public Health at Columbia University and the Children’s Health Fund.” How did the researchers who provided the epidemiological data – the cold, hard facts – for the *New York Times* article determine these numbers? To estimate the impact of the hurricanes on children and families, Abramson and colleagues (2007) used a multi-method approach that included United States Census data, school enrollment data, government records on temporary housing, and data from the *Gulf Coast Child & Family Health Study*, a longitudinal epidemiological study of 1,247 displaced families. The researchers estimated that between 46,582 and 64,934 children were displaced by Hurricane Katrina, and that a majority of displaced children (51.4%) had at least one risk factor for poor long-term outcomes, such as lost medical and/or insurance coverage, poor educational performance and/or depression, anxiety, or behavioral disorder at 2-year follow-up.

With its focus on the population of children exposed to Hurricane Katrina, this research illustrates an epidemiologic approach to the study of trauma. Epidemiological studies of children and youth tend to fall into four broad categories. The first category is research designed to estimate the prevalence and impact of a range of traumas in general populations of youth, sometimes using national samples. The second category is research designed to estimate the severity of exposure to and impact of specific

disasters on children and youth. Many of these studies use school-based samples. A third category is research designed to estimate the prevalence of child maltreatment, which often makes use of official data as reported by child protective service (CPS) agencies. Research on vulnerable groups of children represents a fourth category of epidemiological research. This category includes studies of children at high risk for exposure to trauma, including those in child-serving systems, such as juvenile justice or foster care. In this issue, I have summarized examples from each of these four categories of epidemiological research, offering some overall conclusions about important themes in the literature on trauma and traumatic stress reactions in children and youth.

### General Population Studies

Child and adolescent exposure to a broad range of traumatic experiences has been examined in large epidemiological studies. The *Developmental Victimization Study* (DVS; Finkelhor et al., 2005) examined exposure to 34 forms of victimization experiences in a nationally representative sample of 2,030 children and youth ages 2 to 17 years. In addition to exposure to criminal victimization, the DVS assessed exposure to assaults by peers and siblings, nonsexual assaults to genitals, dating violence, bias and hate crimes, and property thefts. Findings showed widespread exposure to victimization incidents, with 71% exposed to one or more victimization incidents in the past year. Nearly 70% of victimized children experienced multiple exposures, with an average of 3 different kinds of victimization reported.

The *National Survey of Adolescents* (NSA; Kilpatrick & Saunders, 1997), a telephone survey of a nationally representative sample of 4,023 American

*Continued on page 2*

youth aged 12 to 17, estimated that 17.4% had experienced a serious physical assault and 8.1% a sexual assault; 39.4% had witnessed one or more incidents of serious interpersonal violence. The NSA also reported prevalence estimates by gender for posttraumatic stress disorder (PTSD: 3.7% for males and 6.3% for females), major depressive episode (7.4% for males and 13.9% for females), and substance abuse and dependence (8.2% males and 6.2% females) (Kilpatrick, Ruggiero et al., 2003).

*The Great Smoky Mountains Study* (GSMS; Costello et al., 2002; Copeland et al., 2007) is a representative longitudinal study of 1,420 children in the primarily rural western counties of North Carolina. Copeland and colleagues found that by age 16, more than 67.8% were exposed to one or more traumas, such as child maltreatment, domestic violence, traffic injury, major medical trauma, traumatic loss of a significant other, or sexual assault. Costello and colleagues reported a strong graded relationship between the number of family vulnerability factors and risk of exposure to childhood trauma. Copeland et al. (2007) reported that children exposed to trauma had almost double the rates of psychiatric disorders of those not exposed. Higher levels of trauma exposure were related to higher levels of psychopathology, especially anxiety and depressive disorders, and more functional impairments, such as disruption of important relationships and school problems. The prevalence of PTSD in the GSMS sample of 9 – 16 year old children was 0.5%, a finding comparable to other general-population studies of children (Heiervang et al., 2007).

Several studies have examined the prevalence of traumatic experiences and posttraumatic stress reactions in samples of youth and young adults. In the *National Comorbidity Survey* (NCS), Kessler and colleagues (1995) reported that 60.7% of American males and 51.2% of females aged 15-24 reported exposures to one or more traumatic events. PTSD prevalence in this cohort was markedly higher for females (10.3%) than males (2.8%). Breslau and colleagues' (2004) epidemiological study of a cohort of urban youth in a large U.S. city found that by the age of 23 years, the lifetime occurrence of exposure to any trauma was 82.5%, with males (87.2%) more likely to be exposed than females (78.4%). The lifetime prevalence of PTSD was higher for females (7.9%) than males (6.3%). In the earlier Detroit Area Survey, Breslau and colleagues (1991) found a similar gender difference in lifetime prevalence of PTSD: 10.4% for females ages 16-24 versus 6% of their male counterparts.

*The Early Stages of Developmental Psychopathology* (ESDP) study is a prospective longitudinal study of a representative sample of 3,021 14-24-year-old adolescents and young adults in Munich, Germany. Perkonig and colleagues (2000) reported that 21.4% of the sample experienced at least one lifetime event that met the DSM-IV A1 criterion for exposure: 26% of males and 17.7% of females. When the investigators applied the more stringent DSM-IV A2 criterion (i.e., when the event occurred, feeling or reacting with intense fear, hopelessness, horror, or irritability) to the definition of trauma, 17% of the sample qualified: 18.6% males and 15.5% females. The prevalence of PTSD in the general population was reported at 1% for males and 2.2% for females, and the conditional probability of a lifetime PTSD diagnosis among respondents who met the DSM-IV A1 and A2 criteria was 7.8%. At follow-up, Perkonig and colleagues (2005) reported that more than 50% of the cohort with

PTSD at baseline remained significantly symptomatic for more than 3 years. Felitti and colleagues' (e.g., 1998) *Adverse Childhood Experiences (ACE) Study* has examined the cumulative effects of multiple adverse childhood experiences on physical and mental health. The ACE study found that the presence of four or more serious adverse experiences during childhood greatly increased adults' risk for alcoholism, drug abuse, suicide attempts, sexually transmitted diseases, and poor general health.

## Disaster Studies

High estimates of psychiatric symptom prevalence have been reported in studies of children and adolescents exposed to various types of disasters that affected entire communities. Hoven and colleagues (2005) reported findings from the New York City, NY Department of Education Study, which assessed needs among public school students in New York City in grades 4 – 12 after the terrorist attacks on the World Trade Center. Six months after the attacks, the estimated prevalence of PTSD was 10.6%; with agoraphobia at 14.8%; conduct disorder at 12.8%; separation anxiety at 12.3%, and for teens, alcohol problems at 4.5%. Over 60% experienced at least one major traumatic event prior to the attacks. McFarlane (1987) reported PTSD prevalence estimates of 52.8% at 8 months and 57.2% at 26 months among over 800 Australian children exposed to a major brush fire. After Hurricane Andrew devastated South Florida, Vernberg and colleagues (1996) reported that 86% of a sample of over 500 elementary school children experienced hurricane-related PTSD symptoms at 3 months, with more than 55% reporting moderate to severe symptoms. Using a case-control design, Goenjian and colleagues (1995) found 18-month prevalence in excess of 75% for PTSD and major depression for children in an Armenian city that was at the epicenter of a catastrophic earthquake. Somewhat lower rates of PTSD and depression have been reported in studies of child survivors of an earthquake in Taiwan (Hsu et al., 2002) and children in southern Thailand affected by the tsunami in 2004 (Thienkrua et al., 2006).

## Child Maltreatment Studies

*The National Incidence Studies* (NIS; Sedlak & Broadhurst, 1996) were mandated by the U.S. Congress to establish the incidence of child maltreatment. To date, there have been three NIS studies conducted and analyzed (results reported in 1981 (NIS-1), 1988 (NIS-2), and 1996 (NIS-3)). The NIS studies use a "sentinel" methodology in which official field observers report all cases of suspected child abuse encountered during a fixed sampling frame. The NIS estimates include children investigated at CPS agencies, but also include maltreated children who are identified by professionals in a wide range of agencies in representative communities. The most recent National Incidence Study (NIS-3) findings indicated that the total number of abused and neglected children was two-thirds higher in the NIS-3 published report than in the NIS-2 published report. A second source of child maltreatment data is the National Child Abuse and Neglect Data System (NCANDS; US Department of Health and Human Services), a federally sponsored effort that collects and analyzes annual data on child abuse and neglect submitted by the states. The most recent statistics were published in *Child Maltreatment 2005* (US Department of Health and Human Services, 2007). From 1994 to 2005, there was an overall drop in the total number of officially reported

cases. It is important in child maltreatment research to note whether or not the case was “substantiated,” defined as a type of investigation disposition that concludes that the allegation of maltreatment or risk of maltreatment was supported or founded by state law or state policy. The peak year was 1994, with 1,031,000 substantiated cases for all forms of child maltreatment. In 2005, the last year for which data were available, there were 899,000 substantiated cases.

## Studies of At-Risk Children and Youth

Several studies have focused specifically on at-risk populations rather than general populations. Abram and colleagues’ (2004, 2007) Northwestern Juvenile Project of youth 10-18 years of age held in a detention center found that 84% reported multiple exposures to trauma, with a majority exposed to six or more. PTSD was prevalent and highly comorbid with other disorders. Stein and colleagues (2001) documented a high prevalence of exposure to violence among children in foster care. Widom and colleagues’ (2007) longitudinal study of a cohort of abused and neglected children has shown that the accumulation of multiple adverse childhood experiences predispose children towards negative trajectories that contribute significantly to adult outcomes such as major depression. Few children in need of trauma-informed mental health services receive them, however. Findings from the National Survey of Child and Adolescent Well-Being (Burns et al., 2004) estimated that nearly half of

the children in the child welfare system are in need of mental health services, yet only a quarter of these received any such services.

## Summary

Through epidemiological research, we now know that a plurality of children and youth experience exposure to one or more traumatic events in their lifetimes. Yet, as Finkelhor & Jones (2004) have noted, precisely estimating trends over time is an ongoing challenge. We also know that children exposed to trauma — especially those with multiple experiences — are particularly vulnerable to a range of psychological, behavioral, and emotional problems (Paolucci et al., 2001), social maladjustment (Schwartz & Proctor, 2000), and academic failure (Delaney-Black et al., 2002). The cumulative epidemiological evidence is that the adverse effects of traumatic stress experienced from infancy through adolescence may extend well into adulthood, increasing risk for lifelong problems such as depression, PTSD, substance abuse, low occupational attainment, and poor medical health.

## Reference

Eaton, L. (2007, December 7). Many children struggling after ‘05 storms. *The New York Times* (Late Edition [East Coast]), p. A24.

## ABSTRACTS

Abramson, D., Redlener, I., Stehling-Ariza, T., & Fuller, E. (2007). *The legacy of Katrina’s children: Estimating the numbers of at-risk children in the Gulf Coast states of Louisiana and Mississippi*. (National Center for Disaster Preparedness, research brief 2007:12). New York: Columbia University Mailman School of Public Health. This research brief from the National Center for Disaster Preparedness examined the long-term consequences of the 2005 hurricanes (Katrina and Rita) on children of the Gulf Coast. Basing their answers on publicly available data and a variety of other sources of information, the authors sought to determine how many children were displaced, how many had returned to their home communities, how many were still living in transient housing, and how many were at risk for poor outcomes. The total number of displaced persons in Louisiana and Mississippi was estimated at 448,000, including 163,000 children. The rate of return as of September 2007 was 55%, involving approximately 82,000 to 95,000 children. Approximately 11,000 children still resided in trailer parks as of September 29, 2007. The children affected by the hurricanes were exposed to a number of factors associated with poor outcomes. The overall proportion of children with at least one major risk factor was 55% in Louisiana and 47% in Mississippi, causing the authors to estimate that 47,000 to 65,000 children were at risk for poor health, mental health, or educational outcomes.

Breslau, N., Davis, G.C., Andreski, P., & Peterson, E.L. (1991). **Traumatic events and posttraumatic stress disorder in an urban population of young adults.** *Archives of General Psychiatry*, 48, 216-222. To ascertain the prevalence of PTSD and risk factors associated with it, we studied a random sample of 1007 young adults

from a large health maintenance organization in the Detroit, Michigan area. The lifetime prevalence of exposure to traumatic events was 39.1%. The rate of PTSD in those who were exposed was 23.6%, yielding a lifetime prevalence in the sample of 9.2%. Persons with PTSD were at increased risk for other psychiatric disorders; PTSD had stronger associations with anxiety and affective disorders than with substance abuse or dependence. Risk factors for exposure to traumatic events included low education, male sex, early conduct problems, extraversion, and family history of psychiatric disorder or substance problems. Risk factors for PTSD following exposure included early separation from parents, neuroticism, preexisting anxiety or depression, and family history of anxiety. Life-style differences associated with differential exposure to situations that have a high risk for traumatic events and personal predispositions to the PTSD effects of traumatic events might be responsible for a substantial part of PTSD in this population.

Breslau, N., Wilcox, H.C., Storr, C.L., Lucia, V.C., & Anthony, J.C. (2004). **Trauma exposure and posttraumatic stress disorder: A study of youths in urban America.** *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 81, 530-544. We estimate the cumulative occurrence of traumatic events and PTSD, using DSM-IV criteria, in a high-risk sample of young people in the urban United States. The epidemiological sample (n=2,311) was recruited in 1985–1986 at entry into first grade of a public school system of a large mid-Atlantic city. Participants were interviewed about history of trauma and PTSD in 2000–2002 when their mean age was 21 years (n=1,698). Lifetime occurrence of assaultive



violence was 62.6% in males and 33.7% in females. The risk of assaultive violence in males (but not females) varied by childhood area of residence within the city; the occurrence of other traumas did not vary by area of childhood residence. Females had a higher risk of PTSD than males following assaultive violence but not following other traumas. A comparison of the results from this largely inner-city sample with the results from a recent study of a largely suburban sample in which the same criteria and measures of trauma and PTSD were used suggested the possibility that males' risk for assaultive violence and females' risk for PTSD following exposure to assaultive violence might vary by characteristics of the social environment. (Abstract adapted)

Copeland, W.E., Keeler, G., Angold, A., & Costello, E.J. (2007). **Traumatic events and posttraumatic stress in childhood.** *Archives of General Psychiatry*, 64, 577-584. To examine the developmental epidemiology of potential trauma and posttraumatic stress (PTS) in a longitudinal community sample of children, a representative population sample of 1,420 children aged 9, 11, and 13 years at intake were followed up annually through 16 years of age. Traumatic events and PTS were assessed from child and parent reports annually to 16 years of age. More than two thirds of children reported at least 1 traumatic event by 16 years of age, with 13.4% of those children developing some PTS symptoms. Few PTS symptoms or psychiatric disorders were observed for individuals experiencing their first event, and any effects were short-lived. Less than 0.5% of children met all DSM-IV criteria for PTSD. Violent or sexual trauma was associated with the highest rates of symptoms. The PTS symptoms were predicted by previous exposure to multiple traumas, anxiety disorders, and family adversity. Lifetime co-occurrence of other psychiatric disorders with traumatic events and PTS symptoms was high, with the highest rates for anxiety and depressive disorders. In the general population of children, potentially traumatic events are common and do not often result in PTS symptoms, except after multiple traumas or a history of anxiety. The prognosis after the first lifetime trauma exposure was generally favorable. (Abstract adapted)

Costello, E.J., Erkanli, A., Fairbank, J.A., & Angold, A. (2002). **The prevalence of potentially traumatic events in childhood and adolescence.** *Journal of Traumatic Stress*, 15, 99-112. This paper examines exposure to potentially traumatic events from middle childhood through adolescence, and vulnerability to such exposure. Analyses are based on the first 4 annual waves of data from a longitudinal general population study of youth in western North Carolina, involving 4,965 interviews with 1,420 children and adolescents and their parents or guardians. In this general population sample, one-quarter experienced at least one high magnitude event by age 16, 6% within the past 3 months. One third experienced a low magnitude event in the past 3 months. The likelihood of such exposure increased with the number of vulnerability factors. (Abstract adapted)

Felitti, V.J., Anda, R.F., Nordenberg, D., Williamson, D.F., Spitz, A.M., Edwards, V., et al. (1998). **Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study.** *American Journal of Preventive Medicine*, 14, 245-258. A

questionnaire about adverse childhood experiences was mailed to 13,494 adults who had completed a standardized medical evaluation at a large HMO; 9,508 (70.5%) responded. Seven categories of adverse childhood experiences were studied: psychological, physical, or sexual abuse; violence against mother; or living with household members who were substance abusers, mentally ill or suicidal, or ever imprisoned. Logistic regression was used to adjust for effects of demographic factors on the association between the cumulative number of categories of childhood exposures (range: 0-7) and risk factors for the leading causes of death in adult life. More than half of respondents reported at least one, and one-fourth reported  $\geq 2$  categories of childhood exposures. Persons who had experienced four or more categories of childhood exposure, compared to those who had experienced none, had 4- to 12-fold increased health risks for alcoholism, drug abuse, depression, and suicide attempt; a 2- to 4-fold increase in smoking, poor self-rated health,  $\geq 50$  sexual intercourse partners, and sexually transmitted disease; and a 1.4- to 1.6-fold increase in physical inactivity and severe obesity. The number of categories of adverse childhood exposures showed a graded relationship to the presence of adult diseases including ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease. Persons with multiple categories of childhood exposure were likely to have multiple health risk factors later in life. (Abstract adapted)

Finkelhor, D., Ormrod, R., Turner, H., & Hamby, S.L. (2005). **The victimization of children and youth: A comprehensive, national survey.** *Child Maltreatment*, 10, 5-25. This study examined a large spectrum of violence, crime, and victimization experiences in a nationally representative sample of children and youth ages 2 to 17 years. More than one half (530 per 1,000) of the children and youth had experienced a physical assault in the study year, more than 1 in 4 (273 per 1,000) a property offense, more than 1 in 8 (136 per 1,000) a form of child maltreatment, 1 in 12 (82 per 1,000) a sexual victimization, and more than 1 in 3 (357 per 1,000) had been a witness to violence or experienced another form of indirect victimization. Only a minority (29%) had no direct or indirect victimization. The mean number of victimizations for a child or youth with any victimization was 3.0, and a child or youth with one victimization had a 69% chance of experiencing another during a single year.

Goenjian, A.K., Pynoos, R.S., Steinberg, A.M., Najarian, L.M., Asarnow, J.R., Karayan, I., et al. (1995). **Psychiatric comorbidity in children after the 1988 earthquake in Armenia.** *Journal of the American Academy of Child and Adolescent Psychiatry*, 34, 1174-1184. Two hundred eighteen school-age children from three cities at increasing distances from the epicenter of the earthquake were evaluated using the Child Posttraumatic Stress Disorder Reaction Index, the Depression Self-Rating Scale, and the section on separation anxiety (SAD) from the Diagnostic Interview for Children and Adolescents. High rates of current PTSD, depressive disorder, and their co-occurrence were found among victims residing in the two heavily impacted cities. SAD was comparatively less frequent, although symptoms of SAD had been pervasive throughout the region. Severity of posttraumatic stress and depressive reactions were highly correlated. Extent of loss of family members was independently cor-

related with each. After a catastrophic natural disaster, children are at risk for comorbid PTSD and secondary depression. Based on the findings, an interactive model is proposed of postdisaster psychopathology. Early clinical intervention is recommended to prevent chronic posttraumatic stress reactions and secondary depression. (Abstract adapted.)

Hoven, C.W., Duarte, C.S., Lucas, C.P., Wu, P., Mandell, D.J., Goodwin, R.D., et al. (2005). **Psychopathology among New York City public school children 6 months after September 11.** *Archives of General Psychiatry*, 62, 545-552. To determine prevalence and correlates of probable mental disorders among New York City, NY, public school students 6 months following the September 11, 2001 attack, a citywide, random, representative sample of 8,236 students in grades 4 through 12, including oversampling in closest proximity to the World Trade Center site (Ground Zero) and other high-risk areas. Children were screened for probable mental disorders with the Diagnostic Interview Schedule for Children Predictive Scales. One or more of 6 probable anxiety/depressive disorders were identified in 28.6% of all children. The most prevalent were probable agoraphobia (14.8%), probable separation anxiety (12.3%), and probable PTSD (10.6%). Higher levels of exposure correspond to higher prevalence for all probable anxiety/depressive disorders. Girls and children in grades 4 and 5 were the most affected. In logistic regression analyses, child's exposure, exposure of a child's family member, and the child's prior trauma were related to increased likelihood of probable anxiety/depressive disorders. Results were adjusted for different types of exposure, sociodemographic characteristics, and child mental health service use. A high proportion of New York City public school children had a probable mental disorder 6 months after September 11, 2001. The data suggest that there is a relationship between level of exposure to trauma and likelihood of child anxiety/depressive disorders in the community. The results support the need to apply wide-area epidemiological approaches to mental health assessment after any large-scale disaster. (Abstract adapted)

Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C.B. (1995). **Posttraumatic stress disorder in the National Comorbidity Survey.** *Archives of General Psychiatry*, 52, 1048-1060. Data were obtained on the general population epidemiology of DSM-III-R PTSD, including information on estimated life-time prevalence, the kinds of traumas most often associated with PTSD, sociodemographic correlates, the comorbidity of PTSD with other lifetime psychiatric disorders, and the duration of an index episode. Modified versions of the DSM-III-R PTSD module from the Diagnostic Interview Schedule and of the Composite International Diagnostic Interview were administered to a representative national sample of 5,877 persons aged 15 to 54 years in the part II subsample of the National Comorbidity Survey. The estimated lifetime prevalence of PTSD is 7.8%. Prevalence is elevated among women and the previously married. The traumas most commonly associated with PTSD are combat exposure and witnessing among men and rape and sexual molestation among women. PTSD is strongly comorbid with other lifetime DSM-III-R disorders. Survival analysis shows that more than one third of people with an index episode of PTSD fail to recover even after many years.

Kilpatrick, D.G., Rugierro, K.J., Acierno, R., Saunders, B.E., Resnick, H.S., & Best, C.L. (2003). **Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: Results from the National Survey of Adolescents.** *Journal of Consulting and Clinical Psychology*, 71, 692-700. With a national household probability sample of 4,023 telephone-interviewed adolescents ages 12-17, this study provides prevalence, comorbidity, and risk-factor data for PTSD, major depressive episode (MDE), and substance abuse/dependence (SA/D). Roughly 16% of boys and 19% of girls met criteria for at least 1 diagnosis. Six-month PTSD prevalence was 3.7% for boys and 6.3% for girls, 6-month MDE prevalence was 7.4% for boys and 13.9% for girls, and 12-month SA/D prevalence was 8.2% for boys and 6.2% for girls. PTSD was more likely to be comorbid than were MDE and SA/D. Results generally support the hypothesis that exposure to interpersonal violence (i.e., physical assault, sexual assault, or witnessed violence) increases the risk of these disorders and of diagnostic comorbidity.

Kilpatrick, D.G., & Saunders, B.E. (1997). **Prevalence and consequences of child victimization: Results from the National Survey of Adolescents. Final Report.** (SuDoc No. J 28.24/7:P 92). Washington, DC: U.S. Government Printing Office. Preliminary findings from a study of 4,023 adolescents and their parents indicate a significant number of today's youthful population have been victims of sexual and physical abuse and have personally witnessed incidents of violence against others. For many, consequences of these experiences include PTSD and drug and alcohol abuse. The study is part of the National Survey of Adolescents, a household survey sponsored by the National Institute of Justice (NIJ) and conducted by the National Crime Victims Research and Treatment Center at the Medical University of South Carolina. Extrapolating the findings of this study to the national adolescent population as a whole suggests that of the 22.3 million adolescents ages 12-17 in the United States today, approximately 1.8 million have been victims of a serious sexual assault, 3.9 million have been victims of a serious physical assault, and almost 9 million have witnessed serious violence. Nearly 2 million have suffered (and over 1 million still suffer) from PTSD, and about 3.4 million have been drug or alcohol abusers as well. Analysis of the survey information indicates a strong correlation between drug abuse and delinquency. Having been personally victimized and suffering from PTSD also seem to be strong predictors of delinquent behavior.

McFarlane, A.C. (1987). **Posttraumatic phenomena in a longitudinal study of children following a natural disaster.** *Journal of the American Academy of Child and Adolescent Psychiatry*, 26, 764-769. This longitudinal study examined the prevalence of posttraumatic phenomena and how they relate to symptomatic and behavioral disorders in a population of schoolchildren exposed to an Australian bushfire disaster. The prevalence of these phenomena did not change over an 18-month period, suggesting that they were markers of significant developmental trauma. The mothers' responses to the disaster were better predictors of the presence of posttraumatic phenomena in children than the children's direct exposure to the disaster. Both the experience of intrusive memories by the mothers and a changed pattern of parenting seemed to account for this relationship.

Perkonig, A., Kessler, R.C., Storz, S., & Wittchen, H-U. (2000). **Traumatic events and post-traumatic stress disorder in the community: Prevalence, risk factors and comorbidity.** *Acta Psychiatrica Scandinavica*, *101*, 46-59. Lifetime and 12-month prevalence of traumatic events and DSM-IV PTSD as well as risk factors and comorbidity patterns were investigated in a representative community sample (n=3021, aged 14–24 years). Traumatic events and PTSD were assessed with the Munich Composite International Diagnostic Interview (CIDI). Although 26% of male subjects and 17.7% of female subjects reported at least one traumatic event, only a few qualified for a full PTSD diagnosis (1% of males and 2.2% of females). Traumatic events and PTSD were strongly associated with all other mental disorders examined. PTSD occurred as both a primary and a secondary disorder. The prevalence of PTSD in this young German sample is considerably lower than reported in previous studies. However, the conditional probability for PTSD after experiencing traumas, risk factors and comorbidity patterns is quite similar. Traumatic events and full PTSD may increase the risk for other disorders, and vice versa.

Perkonig, A., Pfister, H., Stein, M.B., Höfler, M., Lieb, R., Maercker, A., et al. (2005). **Longitudinal course of posttraumatic stress disorder and posttraumatic stress disorder symptoms in a community sample of adolescents and young adults.** *American Journal of Psychiatry*, *162*, 1320-1327. The data were drawn from a prospective, longitudinal epidemiological study of adolescents and young adults (age 14–24 years) in Munich, Germany (N=2,548). The course of PTSD from baseline to follow-up 34–50 months later was studied in 125 respondents with DSM-IV PTSD or subthreshold PTSD at baseline. Results: Although 52% of the PTSD cases remitted during the follow-up period, 48% showed no significant remission of PTSD symptoms. Respondents with a chronic course were more likely to experience new traumatic event(s) during follow-up, to have higher rates of avoidant symptoms at baseline, and to report more help seeking, compared to respondents with remission. Rates of incident somatoform disorder and other anxiety disorders were also significantly associated with a chronic course. PTSD is often a persistent and chronic disorder. (Abstract adapted)

Sedlak, A.J., & Broadhurst, D.D. (1996). *Executive summary of the Third National Incidence Study of Child Abuse and Neglect*. (DHHS

Publication No. 800.394.3366). Washington, D.C.: U.S. Department of Health and Human Services. This report presents the results of the congressionally mandated Third National Incidence Study of Child Abuse and Neglect (NIS-3). The NIS is the single most comprehensive source of information about the current incidence of child abuse and neglect in the United States. The NIS-3 findings are based on a nationally representative sample of over 5,600 professionals in 842 agencies serving 42 counties. The study used two sets of standardized definitions of abuse and neglect. Under the Harm Standard, children identified to the study were considered to be maltreated only if they had already experienced harm from abuse or neglect. Under the Endangerment Standard, children who experienced abuse or neglect that put them at risk of harm were included in the set of those considered to be maltreated, together with the already-harmed children. The NIS-3 provides us with important insights about the incidence and distribution of child abuse and neglect and about changes in incidence since the previous studies

U.S. Department of Health and Human Services, Administration for Children, Youth and Families (2007). *Child Maltreatment 2005*. Washington, D.C.: U.S. Government Printing Office. This 16th annual publication of data collected via the National Child Abuse and Neglect Data System (NCANDS) is for Federal fiscal year (FFY) 2005. It reflects our commitment to provide the most complete national information about child maltreatment known to the States' child protective services (CPS) agencies.

Vernberg, E.M., La Greca, A.M., Silverman, W.K., & Prinstein, M.J. (1996). **Prediction of posttraumatic stress symptoms in children after Hurricane Andrew.** *Journal of Abnormal Psychology*, *105*, 237-248. The authors used an integrative conceptual model to examine the emergence of PTSD symptoms in 568 elementary-school-age children 3 months after Hurricane Andrew. The model included 4 primary factors: Exposure to Traumatic Events, Child Characteristics, Access to Social Support, and Children's Coping. Overall, 62% of the variance in children's self-reported PTSD symptoms was accounted for by the 4 primary factors, and each factor improved overall prediction of symptoms when entered in the analyses in the order specified by the conceptual model. The findings suggest that the conceptual model may be helpful to organize research and intervention efforts in the wake of natural disasters.

## CITATIONS Annotated by the Editor

Abram, K.M., Teplin, L.A., Charles, D.R., Longworth, S.L., McClelland, G.M., & Dulcan, M.K. (2004). **Posttraumatic stress disorder and trauma in youth in juvenile detention.** *Archives of General Psychiatry*, *61*, 403-410. As part of the larger Northwestern Juvenile Project (NJP), the authors report findings on 898 urban youth (10–18 years) who were held pretrial in a juvenile justice detention center. Most (92.5%) had experienced 1 or more lifetime traumatic events, with 84% reporting more than 1 traumatic experience. In the past year, 11.2% met criteria for PTSD.

Abram, K.M., Washburn, J.J., Teplin, L.A., Emanuel, K.M., Romero, E.G., & McClelland, G.M. (2007). **Posttraumatic stress**

**disorder and psychiatric comorbidity among detained youths.** *Psychiatric Services*, *58*, 1311-1316. Findings from this NJP study of 898 juvenile detainees (10-18 years) showed that PTSD almost invariably co-occurred with other psychiatric disorders. For both male and female detainees, the disorder most likely to co-occur with PTSD was substance abuse (males – 79%, females – 63%).

Burns, B.J., Phillips, S.D., Wagner, H.R., Barth, R.P., Kolko, D.J., Campbell, Y., & Landsverk, J. (2004). **Mental health need and access to mental health services by youths involved with child welfare: A national survey.** *Journal of the American Academy of Child and Adolescent Psychiatry*, *43*, 960-970. This study of



children enrolled in the National Survey of Child and Adolescent Well-Being (NSCAW) identified factors related to need for and use of mental health services in a nationally representative sample of youth entering the child welfare (CW) system after reported maltreatment. Although nearly one half of the sample exhibited clinical need for mental health services as assessed using a standardized measure, only one fourth received any mental health services and the rest received no mental health services.

Delaney-Black, V., Covington, C., Ondersma, S.J., Nordstrom-Klee, B., Templin, T., Ager, J., et al. (2002). **Violence exposure, trauma, and IQ and/or reading deficits among urban children.** *Archives of Pediatrics and Adolescent Medicine*, 156, 280-285. This study investigated the relationship between exposure to violence in childhood to trauma-related distress and performance on standardized tests of child's IQ and reading ability. Study participants were 299 African-American children, age 6-7 years old. Decreased reading ability and lower IQ scores were related to exposure to violence, with trauma-related distress accounting for additional variance in reading ability.

Finkelhor, D., & Jones, L.M. (2004). *Explanations for the decline in child sexual abuse cases.* (Juvenile Justice Bulletin No. NCJ199298) Washington, D.C.: U.S. Government Printing Office. This author explored possible explanations for the decline in officially substantiated cases of child maltreatment found in the NCANDS data set. They concluded that the decline in sexual abuse is real.

Heiervang, E., Stormark, K.M., Lundervold, A.J., Heimann, M., Goodman, R., Posserud, M.-B., et al. (2007). **Psychiatric disorders in Norwegian 8- to 10-year-olds: An epidemiological survey of prevalence, risk factors, and service use.** *Journal of the Academy of Child and Adolescent Psychiatry*, 46, 438-447. The authors report Wave 1 findings from the longitudinal Bergin Child Study of 9,430 children. Seven percent of 8-10-year-olds exhibited a psychiatric disorder. Most common were emotional disorders (3.3%), followed by behavior disorders (3.2%). PTSD prevalence was 0.11%.

Hsu, C-C., Chong, M-Y., Yang, P., & Yen, C-F. (2002). **Posttraumatic stress disorder among adolescent earthquake victims in Taiwan.** *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 875-881. The study team reports findings on exposure and 6-week prevalence of PTSD among 323 junior high school students who survived a severe earthquake in Taiwan. Six weeks postdisaster, 21.7% met clinical criteria for PTSD, with higher prevalence for females than males (25% vs. 17%). PTSD was significantly related to physical injury and to the death of a close family member.

Jones, L.M., Finkelhor, D., & Kopiec, K. (2001). **Why is sexual abuse declining? A survey of state child protection administrators.** *Child Abuse and Neglect*, 25, 1139-1158. The authors report the results of a telephone survey of state child protection administrators. More than half of the officials in states with large declines were unaware of any discussion of the declines within their agency or in the public at large within their states. Reasons why officials and policymakers have seemed to pay little attention to the declines are listed and discussed in the paper.

Paolucci, E.O., Genuis, M.L., & Violato, C. (2001). **A meta-analysis of the published research on the effects of child sexual abuse.** *Journal of Psychology*, 135, 17-36. This study investigated variation in the reported prevalence of child sexual abuse (CSA) in the literature, ranging from 4% to 50%, by employing a meta-analysis of research examining the effects of CSA on several outcomes. There was a substantial effect of (CSA) on PTSD, depression, suicide, sexual promiscuity, sexual perpetration, and academic achievement.

Schwartz, D., & Proctor, L.J. (2000). **Community violence exposure and children's social adjustment in the school peer group: The mediating roles of emotion regulation and social cognition.** *Journal of Consulting and Clinical Psychology*, 68, 670-683. In a study of 285 children in Grades 4-6, strong linkages between violence exposure and social maladjustment emerged with significant differences between boys and girls. Witnessing violence was a risk factor for developing social-cognitive biases but not for emotion regulation problems. Conversely, victimization was significantly associated with impaired emotion regulation and concomitant social difficulties.

Stein, B.D., Zima, B.T., Elliott, M.N., Burnam, M.A., Shahinfar, A., Fox, N.A., et al. (2001). **Violence exposure among school-age children in foster care: Relationship to distress symptoms.** *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 588-594. Of 300 school-aged children (6-13 years) living in out-of-home placement and with foster parents, 85% were witnesses and 51% had been victims of violence. Results also showed that the nature of violence exposure (witness vs. victim) had a significant effect on the child's level of traumatic stress symptoms with victimization involving a weapon having the strongest effect.

Thienkrua, W., Lopes Cardozo, B., Chakkraband, M.L.S., Guadamuz, T.E., Pengjuntr, W., Tantipiwatanaskul, P., et al. (2006). **Symptoms of posttraumatic stress disorder and depression among children in tsunami-affected areas in southern Thailand.** *Journal of the American Medical Association*, 296, 549-559. The authors assessed 371 children aged 7-14 at 2 and 9 months after a tsunami. At 2 months, the prevalence of PTSD symptoms was 13% for children living in camps, 11% for children living in affected villages, and 6% for children in unaffected villages. Prevalence of depression was 11%, 5%, and 8%, respectively. A follow-up assessment of children living in the province most affected by the tsunami showed that the prevalence of these symptoms did not decrease by month 9.

Widom, C.S., DuMont, K., & Czaja, S.J. (2007). **A prospective investigation of major depressive disorder and comorbidity in abused and neglected children grown up.** *Archives of General Psychiatry*, 64, 49-56. This study employed a prospective cohort design in which substantiated abused or neglected children were matched with non-victimized children and followed prospectively into young adulthood. Child abuse and neglect were associated with an increased risk for current major depressive disorder (MDD) in young adulthood. Children who were physically abused or experienced multiple types of abuse were at increased risk of lifetime MDD, whereas neglect increased risk for current MDD. Childhood sexual abuse was not associated with elevated risk of MDD.

## PILOTS UPDATE

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The Resource Center at NCPTSD works with each guest editor of the *PTSD Research Quarterly* to assure that the bibliography includes the best relevant research on the issue's topic. We do this because published literature reviews and meta-analyses are often compromised by improper bibliographic searches.

"The method section describes in detail how the study was conducted," according to the *Publication Manual of the American Psychological Association*. "Such a description enables the reader to evaluate the appropriateness of your methods and the reliability and the validity of your results. It also permits experienced investigators to replicate the study if they so desire." Unfortunately, the authors of many of the literature reviews and meta-analyses that we see do not describe their bibliographic searching methods in sufficient detail to enable the reader to determine whether their searches were properly conceived and executed.

Consider some wording often encountered in descriptions of database searches in literature reviews and meta-analyses: "A search of the studies used the keywords *posttraumatic stress disorder* and *children*" or "We used the search terms *cognitive therapy* and *behavior therapy*." What precisely do the authors of these studies mean by "keywords" or "search terms"? Are they meant to comprise the title, abstract, and descriptor fields of bibliographic database records, which is what most database providers mean by "keywords"? Or are they used as an imprecise synonym for "descriptors", which are terms chosen from the controlled vocabulary of the database being searched?

We need not rehearse here the arguments for using the controlled vocabulary when searching a bibliographic database; the case for that has been made at some length in the *PILOTS Database User's Guide*. There are occasions where a controlled vocabulary provides insufficient access to the literature being sought, or where replication and extension of earlier work is best accomplished by repeating its methodology. But when researchers depart from what are generally

considered to be the best methods, they owe their readers an explanation of their reasons and a justification for their decision. Without those, readers have no way of judging whether these choices were appropriate and whether they compromise the results of the study.

In order to evaluate a literature search, the reader needs to know what sources were used and why these were selected, and to see a precise description of the search strategy that was used. If a search is meant to cover the entirety of the traumatic stress literature, one would expect to see MEDLINE, PsycINFO, and the PILOTS Database listed among the resources consulted — or a convincing explanation of why one or more of these was not used. If the intention is to identify and examine all literature relevant to the topic in question, then one would expect to see an explicit statement that the appropriate descriptors from the databases' controlled vocabularies were included in the search strategy, with the appropriate expansions, explosions, or qualifications of those terms. And if these terms are supplemented with natural-language terms from the titles or abstracts, one would want to know this and have the chance to see how well these terms were chosen.

Just as there are rules governing the proper use of statistical methods in the interpretation of research data, so there are rules that govern the design and interpretation of bibliographic searches. And just as a researcher insufficiently familiar with statistical methodology would be expected to find a collaborator or consultant with the necessary skills, so anyone writing a literature review or compiling a meta-analysis should either acquire the bibliographic expertise to undertake proper literature searches, or seek out expert help.

Fortunately this expertise is readily available. Any university, hospital, or research institute will have one or more librarians whose training and daily work provide a facility in designing, performing, and evaluating bibliographic searches. They will be happy to help researchers ensure the soundness of their bibliographic methodology.



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