



Adverse Childhood Events as Risk Factors for Negative Mental Health Outcomes

The successful resolution of developmental tasks during childhood has long been recognized as crucial to adult mental health. Specifically, theorists such as Sigmund Freud, Erik Erikson, and Jean Piaget posited that the negotiation of stages of human development facilitates psychosocial and cognitive adaptation and is vital to the emergence of creativity throughout life.¹ Conversely, much recent research attests to the deleterious consequences of adverse childhood events on functioning throughout the lifespan.²⁻⁴ This review examines the association between adverse childhood events (which include emotional, physical, and sexual abuse; neglect; childhood household dys-

function; and other forms of childhood trauma) and the emergence of psychiatric symptomatology across the lifespan.

The strong interrelationship between these events and the need for communication among clinicians is also noted, because such communication appears essential for prompt intervention to prevent the sequelae commonly associated with these events. Specifically, the association between adverse childhood events and affective and anxiety disorders, personality disorders, and substance abuse are reviewed. Then, key findings derived from the Adverse Childhood Experiences (ACE) Study — which strongly corroborate the need to examine multiple trau-

Daniel P. Chapman, PhD, MSc; Shanta R. Dube, PhD, MPH; and Robert F. Anda, MD, MS

matic stressors when evaluating the impact of childhood abuse and neglect — are described. As such, this overview illustrates the risk factor concept and exemplifies the ways in which risk factors for common psychiatric conditions are often nonspecific for an array of negative mental health outcomes and that risk factors often co-occur. Adverse childhood events are a set of modifiable risk factors, and intervening to reduce these risk factors may have far-reaching implications in terms of mental health promotion and mental illness prevention.

AFFECTIVE AND ANXIETY DISORDERS

Adverse childhood events have been characteristically investigated by assessing various forms of child abuse and their associations with depression and anxiety, which may, at least in part, be attributable to physiological changes induced by childhood abuse. In a study of 49 women

ages 18 to 45, those reporting childhood abuse had elevated autonomic and pituitary-adrenal responses to stress, relative to controls.⁵ Notably, women who had been both abused as children and currently diagnosed with major depression demonstrated an adrenocorticotrophic hormone response to stressors more than six times higher than that of age-matched controls. These findings suggest that autonomic nervous system and hypothalamic-pituitary-adrenal axis hyper-reactivity may be a consequence of childhood abuse, heightening the subsequent risk for depression. Similarly, those between the ages of 18 and 22 years who reported exposure to parental verbal aggression during childhood, relative to controls not reporting parental verbal aggression, also displayed significantly greater symptoms of “limbic irritability,” such as paroxysmal somatic disturbances, automatisms, and dissociation.⁶ Thus, physiological alterations affecting brain function may be induced by childhood abuse, and, in turn, pose lasting consequences for the emergence of sequelae of adverse childhood events.

These results are consistent with the observation that, relative to women who reported no abuse, women reporting any abuse as a child or adolescent had a relative risk (RR) of 2.5 (95% CI: 1.9 to 3.0) for current depressive disorder, with RRs of 2.4 (1.8 to 3.0), 1.8 (1.2 to 2.8), and 3.3 (2.5 to 4.1), respectively, for women reporting physical abuse only, sexual abuse only, and physical and sexual abuse combined.⁷

The persistence of the risk for affective and anxiety symptomatology was assessed by McCauley and colleagues,⁸ who examined the impact of physical or sexual abuse in childhood or adulthood. Specifically, these investigators compared female patients in four community-based primary care practices reporting no abuse during their lifetime, childhood abuse only, abuse during adulthood only, and abuse during

both childhood and adulthood. Notably, they found that relative to women who reported no abuse, women who reported childhood abuse, but not abuse during adulthood, had significantly elevated scores for depression, anxiety, somatization, and interpersonal sensitivity. These investigators concluded that, for many adults, the adverse effects of childhood physical or sexual abuse are as strong as the effects of current abuse.

Childhood abuse also appears to be a risk factor for suicidality. Among 330 veterans with bipolar disorder, childhood abuse was associated with a significantly increased likelihood of current posttraumatic stress disorder, a greater number of lifetime episodes of major depression, and a higher probability of at least one suicide attempt.⁹ Similarly, related research indicates that childhood sexual abuse — particularly involving intercourse — confers increased risk for social anxiety, major depression, and attempted suicide.¹⁰ As might be expected, individuals attempting suicide on multiple occasions report a significantly greater number of deleterious background events, including childhood emotional abuse and a history of suicide in the family, relative to those attempting suicide only once.¹¹

Moreover, childhood abuse may complicate the treatment of affective disorders. Stratifying patients in the severe depression group were more than twice as likely to have experienced childhood emotional abuse relative to patients with mild to moderate depression. Consequently, patients with a history of emotional abuse may require longer continuation of treatment to optimize depression outcomes.¹² Similarly, in a comparison of medication treatment-resistant versus treatment-responsive patients with depression, Kaplan and Klinetob¹³ found that treatment-resistant patients reported significantly greater levels of emotional abuse during childhood than their treatment-responsive counterparts.

Daniel P. Chapman, PhD, MSc; Shanta R. Dube, PhD, MPH; and Robert F. Anda, MD, MS, are with the Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health, Emerging Investigation and Analytic Methods Branch, Atlanta, GA.

Address correspondence to: Daniel P. Chapman, PhD, MSc, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health, Emerging Investigation and Analytic Methods Branch, 4770 Buford Hwy N.E., Mailstop K-67, Atlanta, GA 30341; fax 770-488-5965; or email: dpc2@cdc.gov.

The authors disclosed no relevant financial relationships.

The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Related research has explored methods of optimizing the treatment of adults who have experienced childhood abuse. Notably, among women with a history of childhood sexual abuse, group treatment augmented the efficacy of individual therapy alone, yielding significantly greater improvement in depression and anxiety.¹⁴ Similarly, significant improvement in depression following a 16-session course of individual interpersonal therapy among women with a history of childhood sexual abuse also has been reported.¹⁵

PERSONALITY DISORDERS

A study sampling records of documented cases of abuse and neglect during childhood — approximately 20 years after the cases of childhood abuse and neglect were initially noted — found a significantly greater prevalence of antisocial personality disorder among abused cases, relative to matched controls.¹⁶ These results were obtained in both genders, as was a greater prevalence of dysthymia among those who had been abused as children. The investigators reported, however, that after controlling for stressful life events, childhood victimization per se appeared to have little direct effect on any of the lifetime mental health outcomes measured. Although not minimizing the deleterious consequences of childhood abuse or neglect, these investigators advocated viewing childhood victimization within the context of other life stressors and adverse experiences across the lifespan.

In a review of the literature, Gunderson and Chu¹⁷ reported childhood trauma to be highly prevalent in the histories of patients with borderline personality disorder. These researchers proposed that recognition of this robust relationship may enable clinicians to better understand the deficits in interpersonal relational skills, behavioral control, and affect tolerance characteristic of patients with borderline

pathology. This understanding may promote development of a stronger therapeutic alliance through acknowledgement of the patient's victimization and empathy regarding the traumatic effects of early victimization throughout the patient's life. From another vantage point, patients with borderline personality

in clinical settings. In a cross-sectional study of female primary care patients, those reporting childhood physical or sexual abuse were significantly more likely to be abusing drugs or to have a history of alcohol abuse relative to their peers who had not been abused.⁸ Thus, adverse childhood events, which, by



Among 330 veterans with bipolar disorder, childhood abuse was associated with a significantly increased likelihood of current posttraumatic stress disorder, a greater number of lifetime episodes of major depression, and a higher probability of at least one suicide attempt.

disorder may, in turn, adversely influence the course and outcome of group therapy among patients with histories of childhood abuse.¹⁸

SUBSTANCE ABUSE

Childhood abuse also appears to be an antecedent to substance abuse in adulthood. Prospective research spanning two decades has revealed that, relative to controls, women who experienced sexual abuse, physical abuse, or neglect during childhood are significantly more likely to manifest alcohol misuse as adults. Notably, however, no significant differences in alcohol misuse were observed between men who had experienced childhood abuse and controls.¹⁶ In the wake of physical or sexual victimization or neglect as children, substance abuse may represent an “internalized” manifestation of psychopathology that is more acceptable to women than “externalized” expressions, such as physical violence or assault directed toward others. Further research, however, is needed to better understand these findings.

Nonetheless, childhood abuse is clearly an antecedent of substance abuse

their very nature, occurred early in the course of development, continue to exert strong effects throughout the lifespan.

Moreover, adverse childhood events may interfere with the course of substance abuse treatment. In a report on patients who were being treated for substance abuse, Easton and coworkers¹⁹ noted that patients with a history of childhood trauma presented with significantly greater depressive symptomatology and had significantly more individual therapy sessions than patients without a history of childhood trauma. Additionally, a history of childhood abuse was identified as a reliable predictor of non-completion of drug rehabilitation treatment,²⁰ suggesting that the presence of adverse childhood events may even render their sequelae more difficult to treat.

THE ADVERSE CHILDHOOD EXPERIENCES (ACE) STUDY

Much of the child abuse literature can be characterized as being limited to the study of the effects of individual forms of abuse that likely co-occur (eg, sexual and physical abuse). Furthermore, this research frequently lacks operational

TABLE 1.

Definitions and Prevalence of Adverse Childhood Experiences from the ACE Study

Category of Adverse Childhood Experience	Women (n = 9,367)	Men (n = 7,970)	Total (n = 17,337)
Abuse	%	%	%
Emotional: Did a parent or other adult in the household ... 1) Often or very often swear at you, insult you, or put you down? 2) Sometimes, often, or very often act in a way that made you afraid that you might be physically hurt?	13.1	7.6	10.6
Physical: Did a parent or other adult in the household ... 1) Sometimes, often, or very often push, grab, slap, or throw something at you? 2) Ever hit you so hard that you had marks or were injured?	27.0	29.9	28.3
Sexual: Did an adult or person at least 5 years older than you ever ... 1) Touch or fondle you in a sexual way? 2) Have you touch their body in a sexual way? 3) Attempt oral, anal, or vaginal intercourse with you? 4) Actually have oral, anal, or vaginal intercourse with you?	24.7	16.0	20.7
Neglect*			
Emotional: 1) There was someone in my family who helped me feel important or special. 2) I felt loved. 3) People in my family looked out for each other. 4) People in my family felt close to each other. 5) My family was a source of strength and support.	16.7	12.4	14.8
Physical: 1) I didn't have enough to eat. 2) I knew there was someone there to take care of me and protect me. 3) My parents were too drunk or too high to take care of me. 4) I had to wear dirty clothes. 5) There was someone to take me to the doctor if I needed it.	9.2	10.7	9.9
Household Dysfunction			
Battered Mother: Was your mother (or step-mother) ... 1) Sometimes, often, or very often pushed, grabbed, slapped, or had something thrown at her? 2) Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? 3) Ever repeatedly hit over at least a few minutes? 4) Ever threatened with or hurt by a knife or gun?	13.7	11.5	12.7
Parental Discord/Divorce: 1) Were your parents ever separated or divorced?	24.5	21.8	23.3
Mental Illness in Household: 1) Was a household member depressed or mentally ill? or 2) Did a household member attempt suicide?	23.3	14.8	19.4
Household Substance Abuse: 1) Did you live with anyone who was a problem drinker or alcoholic? or 2) Did you live with anyone who used street drugs?	29.5	23.8	26.9
Incarcerated Household Member: 1) Did a household member go to prison?	5.2	4.1	4.7

*From wave 2 of the ACE Study, n = 8,629

criteria to clearly define the presence of abuse and does not permit assessment of the cumulative impact of multiple childhood stressors. The relationship between the breadth of exposure to childhood emotional, physical, and sexual abuse, household dysfunction, and health risk behavior during the lifespan requires further elucidation. To further address these issues, Felitti et al²¹ administered a questionnaire about adverse childhood experiences to more than 13,000 adults who had completed a standardized medical examination at a large health maintenance organization (HMO), to which more than 70% responded. Operational definitions, using standardized criteria, were provided for the adverse childhood experiences. These were reported as occurring during the respondent's first 18 years of life and consisted of psychological, physical, or sexual abuse; observation of maternal battery; or living with household members who had mental illnesses, abused drugs, or had been incarcerated.

Most notably, adverse childhood experiences were not rare: more than half of respondents reported at least one adverse childhood experience and one out of four reported exposure to two or more. Strikingly, a 4- to 12-fold increase in the risk for alcoholism, drug abuse, depression, and suicide attempt was observed among respondents reporting four or more categories of adverse childhood experiences, relative to those reporting that they had experienced none.²¹

In addition to exerting a cumulative effect, related investigation has revealed that adverse childhood experiences are highly interrelated and rarely occur singly. Thus, the presence of one adverse childhood experience should serve as a signal to the clinician that others likely occurred, meriting prompt assessment and, potentially, intervention to forestall their sequelae. Dong and colleagues²² found that the number of respondents reporting a high total number of adverse childhood experiences (ACE score) was

significantly greater than would be expected if the individual adverse childhood experiences were independent, thereby providing strong statistical evidence of the interrelatedness of these adverse childhood experiences.

For clinicians, these results suggest that, "where there is smoke, there are likely many fires." For instance, a patient who has experienced physical abuse during childhood is likely at increased risk for having observed maternal battery growing up — along with all the attendant sequelae. Thus, the psychosocial evaluation of patients cannot be considered complete until their childhood exposure to multiple forms of abuse is assessed and information is gathered about their current health risks and behaviors. Definitions and prevalence of adverse childhood experiences, as assessed in the ACE Study, are shown in the Table (see page 362). The following sections describe some of the findings from the ACE Study.

Depressive Disorders and Adverse Childhood Experiences

Examining the association between adverse childhood experiences were reported to have occurred during the first 18 years of life. Additionally, depressive disorders throughout the lifespan revealed a strong dose-response relationship between the ACE score and the probabilities of both lifetime and recent (ie, occurring within the previous year) depressive disorders. Notably, the relationship between the ACE score and the likelihood of lifetime and recent depressive disorders was attenuated slightly — yet remained significant — when a history of growing up with a household member with a mental illness was included in the model for comparative purposes. Because the mean age of respondents was 56.6 years, these results provide striking evidence that exposure to adverse childhood experiences is associated with a significantly increased risk of depressive disorders even decades into adulthood.²³

Suicide and Adverse Childhood Experiences

Despite being a leading cause of death, identification of individuals at risk for suicide remains a difficult task. To address this issue, Dube and coworkers²⁴ examined the relationship between adverse childhood experiences and self-reported suicide attempts. Among 17,337 adult members of an HMO who were attending a primary care clinic, the lifetime prevalence of having at least one suicide attempt was 1.1% among respondents reporting no adverse childhood experiences. Among respondents reporting seven or more adverse childhood experiences, the prevalence of attempting suicide rose dramatically to 35.2%. Adverse childhood experiences in any category were associated with an increased risk of attempted suicide ranging from two- to five-fold, with the ACE score assuming a strong, graded relationship to attempted suicide in both childhood/adolescence and adulthood.

Examination of the effect exerted by other factors associated with suicide — specifically, illicit drug use, depressed affect, and self-reported alcoholism — revealed that these variables only partially mediated the relationship between adverse childhood experiences and attempted suicide. Thus, prevention of childhood abuse and neglect and treatment of affected individuals may be important components in the development of suicide prevention efforts.²⁴

Exposure to Parental Alcohol Abuse and Adverse Childhood Experiences

The correlates of exposure to parental alcohol abuse also were assessed in an examination of 8,629 adult HMO members participating in the ACE Study.²⁵ Respondents with one or more parents who abused alcohol during their childhood reported adjusted odds for adverse childhood experiences that were two to 13 times greater than those whose parents did not abuse alcohol. For almost

every adverse childhood experience category, respondents who reported childhood exposure to both an alcohol-abusing father and mother demonstrated the highest probability of adverse childhood experiences. Given that a prior community-based investigation has indicated the lifetime prevalence of alcohol dependence to be nearly 14%,²⁶ these results are particularly striking and present important implications for the mental and physical health of the population.

CONCLUSIONS

Clearly, a number of research studies, along with the extensive findings from the ACE Study, indicate that childhood physical, sexual, and emotional abuse, as well as neglect, are risk factors for an array of adverse mental health consequences in childhood and adulthood alike. Articulating a model of early detection of adverse childhood experience and prompt intervention, Dube et al²⁵ stated, "Improved coordination of adult and pediatric health care along with related social and substance abuse services may lead to earlier recognition, treatment, and prevention of both adult alcohol abuse and adverse childhood experiences, reducing the negative sequelae of adverse childhood experiences in adolescents and adults." In short, optimizing preventive care necessitates that clinicians routinely screen for adverse childhood experience, provide treatment to the individual, and recognize — given the strong interrelatedness of adverse childhood experiences²² — the need for assessment of other exposures given the presence of one. Possible intervention should involve all members of the household. Future population-based preventive strategies should focus on prevention of child abuse and other forms of childhood trauma as a means of

reducing risk for diverse negative mental health outcomes.

REFERENCES

1. Lesner WF, Hillman D. A developmental schema of creativity. *J Creat Behav*. 1983;17:103-114.
2. Callahan KL, Hilsenroth MJ. Childhood sexual abuse and adult defensive functioning. *J Nerv Ment Dis*. 2005;193(7):473-479.
3. Massie H, Szajnberg N. My life is a longing: Child abuse and its adult sequelae. Results of the Brody longitudinal study from birth to age 30. *Int J Psychoanal*. 2006;87(Pt 2):471-496.
4. Rich CL, Gidycz CA, Warkentin JB, Loh C, Weiland P. Child and adolescent abuse and subsequent victimization: A prospective study. *Child Abuse Negl*. 2005;29(12):1373-1394.
5. Heim C, Newport DJ, Heit S, et al. Pituitary-adrenal and autonomic responses to stress in women after sexual and physical abuse in childhood. *JAMA*. 2000;284(5):592-597.
6. Teicher MH, Samson JA, Polcari A, McGreenery CE. Sticks, stones, and hurtful words: Relative effects of various forms of childhood maltreatment. *Am J Psychiatry*. 2006;163(6):993-1000.
7. Wise LA, Zierler S, Krieger N, Harlow BL. Adult onset of major depressive disorder in relation to early life violent victimisation: A case-control study. *Lancet*. 2001;358(9225):881-887.
8. McCauley J, Kern DE, Kolodner K, et al. Clinical characteristics of women with a history of childhood abuse: Unhealed wounds. *JAMA*. 1997;277(17):1362-1368.
9. Brown GR, McBride L, Bauer MS, Williford WO; Cooperative Studies Program 430 Study Team. Impact of childhood abuse on the course of bipolar disorder: A replication study in U.S. veterans. *J Affect Disord*. 2005;89(1-3):57-67.
10. Nelson EC, Heath AC, Madden PA, et al. Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: Results from a twin study. *Arch Gen Psychiatry*. 2002;59(2):139-145.
11. Forman EM, Berk MS, Henriques GR, Brown GK, Beck AT. History of multiple suicide attempts as a behavioral marker of severe psychopathology. *Am J Psychiatry*. 2004;161(3):437-443.
12. Walker EA, Katon WJ, Russo J, et al. Predictors of outcome in a primary care depression trial. *J Gen Intern Med*. 2000;15(12):859-867.
13. Kaplan MJ, Klinetob NA. Childhood emotional trauma and chronic posttraumatic stress disorder in adult outpatients with treatment-resistant depression. *J Nerv Ment Dis*. 2000;188(9):596-601.
14. Westbury E, Tutty LM. The efficacy of group treatment for survivors of childhood abuse. *Child Abuse Negl*. 1999;23(1):31-44.
15. Talbot NL, Conwell Y, O'Hara MW, et al. Interpersonal psychotherapy for depressed women with sexual abuse histories: A pilot study in a community mental health center. *J Nerv Ment Dis*. 2005;193(12):847-850.
16. Horwitz AV, Widom CS, McLaughlin J, White HR. The impact of childhood abuse and neglect on adult mental health: A prospective study. *J Health Soc Behav*. 2001;42(2):184-201.
17. Gunderson JG, Chu JA. Treatment implications of past trauma in borderline personality disorder. *Harv Rev Psychiatry*. 1993;1(2):75-81.
18. Cloitre M, Koenen KC. The impact of borderline personality disorder on process group outcome among women with posttraumatic stress disorder related to childhood abuse. *Int J Group Psychother*. 2001;51(3):379-398.
19. Easton CJ, Swan S, Sinha R. Prevalence of family violence in clients entering substance abuse treatment. *J Subs Abuse Treat*. 2000;18(1):23-28.
20. Palmer JA, Palmer LK, Williamson D. Childhood abuse as a factor in attrition from drug rehabilitation. *Psychol Rep*. 1995;76(3 Pt 1):879-882.
21. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 1998;14(4):245-258.
22. Dong M, Anda RF, Felitti VJ, et al. The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse Negl*. 2004;28(7):771-784.
23. Chapman DP, Whitfield CL, Felitti VJ, Dube SR, Edwards VJ, Anda RF. Adverse childhood experiences and the risk of depressive disorders in adulthood. *J Affect Disord*. 2004;82(2):217-225.
24. Dube SR, Anda RF, Felitti VJ, Chapman DP, Williamson DF, Giles WH. Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the Adverse Childhood Experiences Study. *JAMA*. 2001;286(24):3089-3096.
25. Dube SR, Anda RF, Felitti VJ, Croft JB, Edwards VJ, Giles WH. Growing up with parental alcohol abuse: Exposure to childhood abuse, neglect, and household dysfunction. *Child Abuse Negl*. 2001;25(12):1627-1640.
26. Andreasen NC, Black DW. Alcohol-related disorders. In: *Introductory Textbook of Psychiatry*, 3rd ed. Washington, DC: American Psychiatric Publishing; 2001:403-422.

Copyright of *Psychiatric Annals* is the property of SLACK Incorporated and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.