

A Critical Assessment of the Adverse Childhood Experiences Study at 20 Years

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INTRODUCTION

This year marks the 20th anniversary of publication in this journal of the first of many articles on the adverse childhood experiences (ACEs) research by Drs. Felitti, Anda, and colleagues.¹ As we celebrate the impact of this seminal research, it is also imperative to assess critically its serious limitations: an unrepresentative study population and narrow operationalization of childhood adversity lead to undercounting adverse experiences and misrepresenting their social distribution. Placing ACEs research—and the movement it has generated—in the wider contexts provided by the social determinants of health framework,² and by the rapidly growing biology and neuroscience of early childhood adversity,^{3–5} can enrich ACEs research and extend its impact to shaping primary prevention policies that address social and economic conditions producing adversity.

The research by Felitti and Anda demonstrated a strong relationship between the number of childhood adversities that a sample of predominantly white, middle-class, adult, Kaiser Permanente patients reported experiencing, and the likelihood of a wide range of health and behavioral outcomes, including chronic diseases, depression, and substance abuse.¹ Their work has catalyzed a large body of research and inspired an influential movement on behalf of trauma-informed institutions and resilience-building efforts. It has been popularized through hundreds of trainings, statewide ACE networks, a formidable web presence through www.acesonnection.com and www.acestoohigh.com, a film (*Resilience*), and a recently televised *60 Minutes* segment with Oprah Winfrey.

Setting ACEs research in the broader context of the social determinants of health and the biology of social adversity helps address the serious limitations that result from extrapolating results from an unrepresentative study population and an inadequate measure of adverse experiences. This wider context invites research, practice, and policy that address the significant adversities children face resulting from child poverty, economic and

racial segregation, unaffordable housing, stagnant wages, and weak social supports for parents and caretakers.

The social determinants of health framework refers generally to the health effects of the material, behavioral, and psychosocial conditions shaping people's lives.² Applying this framework to ACEs research expands the context of adversity beyond households to include the life circumstances of individuals and families, for example, poverty and social hierarchies such as race.^{4,6,7}

The developing neuroscience and biology of social adversity also provide context for assessing and extending ACEs research.³ This research identifies biological mechanisms through which early adversity can lead to toxic stress and allostatic load and thus to problematic behavioral and health outcomes in childhood and later in life.⁸ This rapidly expanding research employs data from subjects throughout the life course and frequently uses poverty as the measure of adversity. It has thus remained largely independent of the line of research launched by Felitti and Anda. However, its findings about biological mechanisms have been imported into the ACEs movement and ACEs trainings as “ACEs Science.”^a

Viewed in this broader context, important limitations of the research by Felitti and Anda become evident: (1) the 10-item ACE index fails to include many dimensions of childhood adversity derived from social inequalities and thus underrepresents the presence of adversity among patients and in communities, (2) it highlights adult health and behavioral outcomes but underplays the effects of adversity throughout childhood and across generations, (3) it focuses solely on adversities—a deficit model—and

^aSee, for example, <https://acestoohigh.com/aces-101/>.

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fails to include assets such as protective factors, and (4) medical and therapeutic interventions dominate the responses to ACEs in much of the resilience and trauma-informed care movement while too often ignoring broad policy approaches to prevention. Such limitations are understandable in pioneering research. But researchers and practitioners should not be held captive by this seminal and heavily promoted work. Taking account of its limits will sharpen the focus of future research and widen the range of possibilities for undertaking work on primary prevention.

UNDERSTANDING AND MEASURING ADVERSITY

The ACE index by Felitti and Anda utilizes a narrow definition of adversity, measuring childhood exposure to emotional, physical, and sexual abuse and household dysfunction using a 10-item questionnaire. These adversities, originally identified in an unrepresentative study population, focus on decontextualized households and do not include broader social factors, such as poverty and racism, highlighted in the social determinants of health framework.² Nor do they include aspects of urban neighborhood context, such as violence, over-policing, and environmental pollutants, as well as experiences driven by low income, such as food insecurity, eviction, overcrowded housing, juvenile justice contact, homelessness, and household stresses of single parents with weak support networks.⁹ By neglecting household and community context, the ACEs research also ignores the wide variability in available resources that protect against toxic stress and support resilience.^{10,11}

Reliance on the definition of adversity by Felitti and Anda obscures efforts to widen and deepen understanding of adverse conditions and experiences affecting children's development. Indeed, the concept of childhood adversity is too often reified in both research and the ACEs movement as the ACE score. The Centers for Disease Control and Prevention contributes to this reification by including a version of the original ACE index to supplement the widely used Behavioral Risk Factor Surveillance System survey. States have written definitions of childhood adversity into law that simply enumerate the ten items in the ACE index.^b

^bFor example, HCR 10 2017 Gen Sess (Concurrent Resolution Encouraging Identification and Support of Traumatic Childhood Experiences Survivors (Utah); Adverse Childhood Experiences, Wash Rev Code §70.305 (2011); ACR 155 §144 (Childhood brain development: adverse experiences: toxic stress) (Cal 2014).

In fact, alternative measures have been proposed,^{9,12–15} and one in the National Survey of Children's Health¹⁶ is widely used and often confused with the original ACE measure.^c The Building Community Resilience Model highlights adverse community environments as the context for understanding early adversity.¹⁵

By contrast, biological/neuroscientific research on early adversity often uses poverty as a proxy for adversity, not the ACE index. Without further specification, however, poverty fails to identify more proximate and sensitive indicators of stress induction, such as food insecurity, homelessness, income instability, chaotic households, overcrowding, and exposure to violence. By relying on either poverty or the ACE index as the standard metrics of childhood adversity, researchers fail to probe more deeply for a precise understanding of the environments and circumstances that produce—and protect against—toxic stress for children. Building that detailed knowledge should be a major research priority to inform efforts at primary prevention.

IMPLICATIONS OF EARLY ADVERSITY OVER THE LIFE COURSE

The Felitti and Anda study of ACEs understandably focuses on adult health risks because the data come from retrospective reports by and health records of adult Kaiser Permanente patients. By contrast, the rich and distinctive neuroscience/biology research literature includes studies of children and adolescents and highlights the developmental implications of adversity for children. It thus complements and extends the focus of the original ACE research.^{5,17,18} Research also underlines the life course and intergenerational effects of childhood adversity and points to epigenetic changes that may arise from parents' adversity and affect their children's health and development.^{5,19–23}

Neuroscientific research has uncovered compelling evidence for the biological mechanisms that can alter the development of children's neural architecture, resulting in decreased learning and memory, self-regulation, and executive functioning.^{24,25} When protective factors are absent or weak, conditions of chronic stress, such as material or emotional deprivation, lead to accumulating toxic stress, which negatively affects the neuroendocrine system and brain development.¹¹ In sum, adversity can hinder children's development, health, behavior, and school performance and thus their life trajectories.^{5,26}

^cThe National Survey of Children's Health ACE measure includes economic hardship, witnessing neighborhood violence, parental death, and experiencing racial or ethnic discrimination, as well as variants of five of the original ACE items.

Therapeutic interventions and more responsive and caring institutions for affected children constitute only part of the response to early adversity. Primary prevention requires identifying and ameliorating early adversities themselves and building comprehensive community resources in support of resilience through policy interventions at the local, state, and national levels.

RECOGNIZING PROTECTIVE FACTORS AND BUILDING RESILIENCE

Felitti, Anda, and their colleagues established a deficit model of health and child development that highlights adversities.¹ That model should be supplemented by attention to protective relationships that buffer the detrimental effects of adversity and alter the development of brain architecture in positive ways.¹⁰ The neuroscience of child development offers that supplement through its exploration of brain plasticity and interactions between genetic and environmental factors leading to resilience. A central finding is that protective factors, particularly stable relationships with caring and supportive adults, are essential in counterbalancing the effects of adversity.^{10,11} That research also reveals that some children exhibit greater biological sensitivity to both adverse and positive experiences.^{10,27} These individuals may struggle particularly with adversity, but thrive when supportive and protective relationships are available, as do children less sensitive to context.^{10,27}

Acknowledging protective factors is consistent with a bio-social-ecological model that defines resilience as those qualities of individuals and their social environments that help individuals adapt in the face of adversity.^{22,28} Protective factors that boost resilience at the community or societal level might include home visiting, high-quality child care, mentoring programs, increased neighborhood safety, family leave policies, and cultural or faith-based supports through churches or community groups.¹⁰

By adopting the bio-social-ecological model of resilience, ACE-informed practitioners can resist identifying resilience primarily as a characteristic of individuals and advocate not only for appropriate skill development and therapy for children but also for policies that build societal, community, and household resources to support resilience. The Building Community Resilience Collaborative¹⁵ models such an approach.

WIDENING PREVENTION EFFORTS TO INCLUDE SOCIAL POLICY

Felitti et al.¹ acknowledged the importance of upstream prevention in their original study, noting that prevention of ACEs would only come from social changes that

provide support for improved family environments. Integrating childhood adversity research into the social determinants of the health framework widens the horizon for preventive action to include policies that reduce structural causes of adversity and strengthen social supports for parents.

Neuroscience indicates that promoting the healthy early development of children will more effectively prevent later medical and behavioral issues than treating behavioral and health problems that may arise from adversity.²⁴ Clearer recognition of the social distribution of adversity could drive policy-based preventive efforts, including, for example, programs providing parental support and center-based care for children, affordable and stable housing, income supplements for working parents, increased minimum wage, and universal health care.²⁴

Primary prevention of childhood adversity requires recognition that both patterns of adversity and of access to resources supporting resilience are imbedded in social inequalities. This crucial lesson of the social determinants of health framework builds on a central tenet of the ACEs movement—an accurate insistence that the ten ACE adversities are found in all corners of society. That perspective must be complemented, however, by one that recognizes as well the reality that those ten adversities along with many not included in the ACE index are differentially distributed across divides of income, race, and residential location.^{26,29–31} If this lesson is missed and the conception of adversities is confined largely to childhood abuse and neglect, primary and secondary prevention efforts will be conceived too narrowly.^d A broader understanding of adversity and its social distribution leads to policy-based approaches to reducing adversities that complement more medicalized and therapeutic responses to their effects.

CONCLUSIONS

On the 20th anniversary of the seminal research by Felitti and Anda, it is time to situate it and the movement it has generated in the broader frameworks of the social determinants of health and the biology/neuroscience of early childhood adversity. By doing so, researchers and practitioners can (1) produce more sensitive and representative indicators of childhood adversity that more accurately gauge its social distribution within patient populations and within communities; (2) underline the effects of adversities on health and life chances

^dFor example, a comprehensive review of the ACE prevention literature for the Vermont legislature focuses on preventing child maltreatment and promoting healthy family functioning, trauma screening, and treatment; it fails to address the economic and social contexts of families.³²

over the life course and across generations; (3) more fully understand how protective factors, adversities, and social context interact to affect health and behavior; and (4) identify promising primary prevention efforts that combine individual therapeutic interventions with policy approaches to reducing socially structured adversities and increasing supports for resilience. As a result, work on ACEs can contribute significantly to reducing health and achievement disparities across place, race, and class.

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