4-1-2019

The Implications of ACE Science: A Call to Respond

Valerie Norcross
Parkland College

The Implications of ACE Science: A Call to Respond

Valerie Norcross

Parkland College

Author Note

The author is pursuing a Bachelor's of Social Work, beginning with an Associate of Arts degree from Parkland College.

The author researched this topic because of personal interest in trauma counseling and mental health issues. Following guidance from their professor, the student composed this paper with a formal style. This American Psychological Association format is in accordance with the standards of the student's future profession.

Abstract

This paper summarizes the original study on the health effects of Adverse Childhood Experiences (ACEs), which demonstrated a strong correlation between childhood trauma and the leading medical causes of death in the U.S. This work then explains the basics of the brain's response to prolonged stress and how this may lead people to become more reactive and turn to unhealthy habits as coping mechanisms. Considering the implications of this science, the paper presents both positive and cautionary evidence for screening patients for ACEs. It points to the benefits of informing affected individuals about the neurobiology of trauma and concludes by highlighting the importance of supporting families as a way of preventing ACEs.

Keywords: ACEs, ACE scores, trauma, neurobiology, screening, education, prevention

The Implications of ACE Science: A Call to Respond

Medically speaking, what are the top killers in the U.S. today? If you answered with heart attacks, cancer, or strokes, then you are correct. These paths to death are varied and far-reaching, and until the turn of the century the biological causes of these killers also seemed unrelated. But in 1998, the medical group Kaiser Permanente in partnership with the U.S. Center for Disease Control and Prevention (CDC) released the findings of a study concerning Adverse Childhood Experiences (ACEs) and their link to deadly diseases. Their work triggered waves of new research examining the effect of stress and trauma on human brain development; research which has been spurred in recent years by the advent of brain neuroimaging capabilities. Understanding this "ACE Science" holds practical implications for all those working towards the health of our nation.

Background: The ACE Study

1998 marked the release of groundbreaking research in the form of a study: "Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study." Kaiser Permanente, a large health maintenance organization in Southern California, carried out the research with support of the CDC and in agreement with the Association of Teachers of Preventive Medicine. The work boasts many qualified contributors, headed by Dr. Vincent J Felitti. They based their analysis on 8,056 survey responses from individuals who were examined at Permanente in 1995 and 1996. The survey asked questions to determine if respondents had suffered any "abuse or household dysfunction" before the age of 18. They separated these adverse childhood experiences into

seven categories: psychological, physical, or sexual abuse, and whether there was substance abuse, mental illness, violent treatment of their mother, or criminal behavior in their home. A "yes" in any of these categories earned the respondent a point, meaning that individuals were assigned a number between zero and seven: their ACE score. Felitti and his team then ranked patients with ACE scores from zero to four or more and looked at what percentages of these categories were affected by the top ten health risk behaviors—behaviors thought to contribute to ischemic heart disease (leading to heart attacks), cancer, strokes, chronic bronchitis or emphysema, and diabetes. They also looked at the ACE scores of those *actually* affected by these leading causes of death in the U.S. (Felitti et al., 1998).

Their findings were remarkable. Firstly, it established that ACEs are common, as more than half of participants reported at least one. More than that, however, it showed a strong correlation between ACEs and the leading causes of death in the U.S. As Dr. Nadine Burke Harris explains in her 2015 TED talk, the data shows that in comparison to a score of zero, a score of 4 or more means that her patients are two and a half times more likely to develop chronic obstructive pulmonary disease, four and a half times more likely to struggle with depression, and twelve times more likely to be suicidal, to give just a few examples. The charts show what's called a dose-response relationship, or as Harris puts it, "The higher your ACE score, the worse your health outcomes."

Now in many ways, these findings align with common sense. Experience tells us that children from troubled backgrounds are more likely to be poor, thus having less access to health care and education opportunities and less healthy environments. Couldn't this social structure explain the results of the Permanente study? Not really. Consider the demographics of the study

participants: with an average age of 56, almost 80% reported as white, and 43% were college-educated. Only 6% did not finish high school. The study was also statistically adjusted so that age, sex, race, and education level would not skew the results (Felitti et al., 1998). This heightens the impact of the already drastic results, showing that these health correlations are relevant to all demographics (Harris, 2015). Many similar studies continue to confirm the original research (Stevens, 2017).

ACE Science Today

The drive to know what is going on beneath the surface of these sweeping health issues led scientists to seek out how a child's brain develops in response to adversity: the neurobiology of trauma. This body of knowledge is often termed "ACE science," and Jane Stevens, founder and publisher of one of the top resource websites for learning about ACEs, offers the basics. In a stressful situation, the brain releases the hormones cortisol and adrenaline, triggering the body's fight or flight reaction (Harris, 2015). It's a natural, protective response to danger, but when this part of the nervous system is repeatedly or continuously activated, it wears on the glands producing these chemicals. Living in this heightened state of stress can lead to high blood pressure and its negative consequences. It also keeps blood glucose levels high, which can cause type 2 diabetes (Stevens 2017).

Aside from the direct wear-and-tear on the human body as a result of trauma, sustained stress changes the way the brain reacts, only worsening the situations of affected individuals. Children are especially susceptible to this damage since their brains are developing more rapidly than the brains of adults. Researcher and psychotherapist Lauri Leitch points to the fact that high levels of cortisol and adrenaline inhibit the functioning of the prefrontal cortex of the brain,

which handles logical reasoning. This tendency enables, as Leitch calls it, fast system processing. This system is lifesaving if you need to jump out of the way of a car that veered onto the sidewalk. In that scenario the split second taken to logically evaluate the situation would be deadly (2017). But logical reasoning is extremely important in social situations. People with a history of trauma may be unconsciously triggered by perception of a threat and then react without engaging their reasoning, behaving in ways they later regret. And significantly, Stevens points out that this sensitivity actually increases over time (2017).

What emerges from the research is a complex web of interconnected health risks. In one sense, ACEs contribute directly to poor health. The high levels of cortisol and adrenaline associated with stress weaken the heart, circulatory, and immune systems, leaving the individual susceptible to a host of diseases (Stevens 2017). There is, however, a more indirect path of damage. As Felitti points out in a 2009 commentary for American Pediatrics, negative childhood experiences are rarely talked about because of a cultural tendency towards shame and secrecy in these areas. With the underlying trauma ignored, individuals with high ACEs are then more likely to engage in health risk behaviors such as smoking, overeating, unsafe sexual encounters, and various drugs, "which provide immediate partial relief from the emotional problems caused by traumatic childhood experiences." In Felitti's words, this presents "A public health paradox…wherein the public health problem is also often an unconsciously attempted solution." With both the direct and indirect effects of ACEs taken together it is sobering, but not impossible to understand why patients with the highest number of ACEs have an average life expectancy of twenty years less than the average American (Leitch 2017).

Implications of ACE Science

What then is our response? The research reveals a deep issue with sweeping impacts on the health of our nation. As the body of evidence for the negative impact of ACEs grows, professionals in the medical, counseling, and social work fields are searching for solutions through sensitive screening, education, therapy, and, ultimately, prevention.

Sensitive Screening

As Dr. Harris explained in her ground-breaking TED talk, her first response to the Permanente study was to begin screening the children she saw as part of their regular physical. This way, she knows if the patient in her exam room is at high risk of malady (2015). Clinical Psychologist Carryl P. Navalta and authors Lesley McGee and Jolene Underwood also advocate for screening in their article for the Journal of Mental Health Counseling. In fact, they go so far as to "mandate" that counselors working in light of the neurobiology of trauma assess all patients for ACEs. This is because it allows counselors "to improve people's lives by intervening along the entire brain-context continuum" (2018). A 2018 research report from the Urban Institute, titled "Early Adopters of Trauma-Informed Care," highlights screening as a primary healthcare response to ACE Science. Authors Lisa Dubay, Rachel A. Burton, and Marni Epstein write that all six of the health organizations interviewed for the study believe that knowing the ACE history of their patients is useful (p. 23).

The same report, however, presents differing views on exactly *how* best to obtain ACE information. Some interviewees felt that giving patients the assessment to fill out helped them answer with more honesty, though under-reporting of ACEs was still likely. Another

organization sensed success in a trusted clinician asking the questions directly. There were mixed feelings about screening adults, as the workers did not want to take time away from the immediate health problem. They also cited concerns about re-traumatizing patients, and recommended restricting screening to days when there were behavioral health staff on site (Dubay, 2018, p. 25).

Another caveat to the original ACE study is that the seven categories of adversity initially used are far from exhaustive. Doctors Roy Wade, Judy A. Shea, David Rubin, and Joanne Wood conceptualized a study that gathered low-income youth in Philadelphia into focus groups to discuss and compile their highest stressors. While many of their experiences overlapped with those assessed in the original ACE study, the youth pointed out that the category for divorced parents was irrelevant, as a large number of their families were single-parent to begin with. The youth also cited poverty as a source of high stress (2014). Interviewees from the Urban Institute report agree, mentioning patient frustration that divorce and harsh physical treatment were considered while experiences such as homelessness were not. Researchers recognize that the target audience should be considered when crafting assessments, and subsequent ACE studies have greatly expanded the criteria for adverse childhood experiences (Dubay, 2018) (Stephens, 2017).

These sources are not alone in expressing concern that insensitive screening may cause harm. Leitch calls out the fact that the types of questions asked in the typical ACEs assessment focus solely on negative events and emotions. This raises ethical concerns because of the potential for re-traumatization. Due to lack of resources at institutions performing these intake surveys, Leitch acknowledges the pressure for social service workers to quickly learn the most

important information: the individual's past and current problems. "And," Leitch explains, "clients are expecting that focus. But, the true 'heart of the matter' is the resilience that a person retains in the face of many challenges. Those factors that contribute to resilience are the factors it is important to know about" (2017). *Resilience* and *protective factors* are terms used in connection with ACE scores to talk about the positive elements of a person's history. After all, some individuals with high ACE scores do NOT experience the common detrimental health effects, and researchers are trying to figure out what elements contribute to that resilience. Leitch urges that strength-oriented questions become part of ACE screenings. For example, "In your childhood was there a person or persons in your family who took a positive interest in you?" or "If your good friend was here with us today and I asked her what she likes best about you, what would she say?" These kinds of questions help patients to feel understood and increases their cooperation in further therapy or research. Assessments including positive elements of their life history also paint a more accurate picture, enabling caregivers to come alongside the individual in a more helpful way (Leitch, 2017).

Education

Despite the nuances of screening patients for ACEs, it remains a helpful practice because it creates the opportunity for education. Considering the goal of rehabilitating offenders in the Justice System, Leitch argues that too few interventions are concerned with the neuroscience involved. Corrections officers and caregivers should be concerned, however, because it plays a huge role for prisoners suffering from poor impulse control because of the trauma they've experienced. Leitch highlights the positives: "When these symptoms and behaviors are viewed from a neurobiological lens that highlights how the human nervous system is wired to respond to

threat and fear the use of negative labels decreases and the focus is on finding ways to bring the nervous system back into balance." Specifically, teaching individuals with high ACE scores can help them build self-regulation skills. In the presence of a stressful trigger, this person's fight-or-flight response kicks in. Equipped with awareness, however, they may be able to focus on breathing patterns, muscle relaxation techniques, and redirecting their attention so that they maintain calm and self-control. Not only does this grant dignity and empowerment, but over time these habits can rewire the brain for reduced reactivity and greater focus—undoing some of the damage dealt by trauma (Leitch, 2017). Navalta also talks about the benefits of education in terms of increased patient mindfulness (2018). On a national level, the understanding of the neurobiology of trauma has led to an approach called trauma-informed care, which asks, "'What happened to you?' instead of 'What's wrong with you?'" (Stephens, 2017). Teaching ACE science to the family, friends, and caregivers of affected individuals is important, too, because comprehending the depth of the issue sparks greater compassion.

Therapy

Education is often the first step in therapy, a main response to someone affected by ACEs. Navalta offers Cognitive-behavioral therapy (CBT) as a proven method, though she calls for more research to be done specifically examining the effects of CBT on children with ACEs. Play therapy also shows promise (2018). Another emerging therapy designed to build resilience in at-risk families is explained by William Saltzman for the Family Process biomedical journal. The method is called FOCUS, which stands for Families OverComing Under Stress. It is a brief therapy, involving nine sessions with different sub-groups of the family to construct a narrative of the stressful event(s) and visually plot the emotion levels of each family member throughout

the timeline. This improves understanding, healthy communication, and thus stability within the family (2016). FOCUS is just one of many services that can help to rehabilitate children and communities wracked by adversity.

Prevention

Of course, in a best-case scenario, ACEs don't happen in the first place, so the most valuable insight offered by the ACE science is how to prevent them. Through screening, many health providers, teachers, and counselors have the opportunity to intervene on behalf of children before an ACE reaches its most damaging point. Dr. Tina Maschi issues a call for social workers specifically to recognize the effects of ACEs on children who may be struggling and labeled as delinquent, saying, "The time has come for our profession to fully embrace children's 'rights,' even when their behavior may be labeled 'wrong'" (2009). Supporting and protecting children while they are young can prevent them from involvement with the criminal justice system as adults, along with boosting their physical health outlook. A strong census exists among professionals who study ACEs: A primary way to prevent them is by promoting strong families (Leitch, 2017). This is supported by Doctors Heather Larkin, Vincent Felitti, and Robert Anda in their report in which they list both family support and parenting services as action steps for social workers and policy makers (2014). Felitti echoes this sentiment in a 2009 commentary: "One suspects that improving parenting skills across the nation might be the crucial issue here…The impact of a successful approach here might be as great as that of a major vaccine." Programs that foster healthy families and promote good parenting don't need to be complex. The brief family therapy FOCUS described earlier is a good example. In addition, Dr. Robert Sege and Charlyn Browne offer a simple mindset framework for fostering secure child development. HOPE, which

stands for Health Outcomes from Positive Experiences, helps organizations focus on positive influences on children's health and development. The core of their approach involves strengthening families (2017).

Conclusion

The original ACE study was just the beginning. Research into the top medical causes of death in the U.S. opened the floodgates of understanding on the impacts of trauma on brain development, especially for children. The neurobiological response to stress carries measurable, long-term, negative health effects and often increases brain reactivity, making it more difficult for those affected to function well amid the normal stresses of life. Consequently, individuals with high ACE scores are more likely to engage in coping mechanisms that increase their risk of succumbing to deadly diseases. While complicated and overwhelming, the implications of the science are also too great to ignore. Medical, social work, and counseling professionals have already taken action with screening, which provides opportunities for education, therapy, and a clearer path to prevention. While much remains to be learned, ACE science sounds a clear call to respond with compassion for a more healthy nation.

References

Dubay, L., Burton, R. A., Epstein, M. (2018 July) Early Adopters of Trauma-Informed Care: An Implementation Analysis of the Advancing Trauma-Informed Care Grantees. [Online Research Report] Retrieved from https://www.chcs.org/resource/early-adopters-of-trauma-informed-care-an-implementation-analysis-of-the-advancing-trauma-informed-care-grantees/

Felitti, M. F. V. J., Anda, M. M. R. F., Nordenberg, M. D., Williamson, M. P. D. F., Spitz, M. M. A. M., Edwards, B. V., … Marks, M. M. J. S. (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.

Felitti, V. (2009) Adverse Childhood Experiences and Adult Health. American Pediatrics 9, 131-2.

r, N. B. (2015). TEDTalks: Nadine Burke Harris – How childhood trauma affects health across a lifetime. Films on Demand. Retrived from https://ezproxy.parkland.edu:443/login?url=https://seearch.ebscohost.com/login.aspx?direct=true&db=edsfod&AN=edsfod.114600&site=eds-live

Larkin, H., Felitti, V. J., & Anda, R. F. (2014). Social work and adverse childhood experiences research: implications for practice and health policy. Social Work in Public Health, 29(1), 1–16. https://doi.org/10.1080/19371918.2011.619433

Leitch, Laurie. (2017). Action steps using ACEs and trauma-informed care: a resilience model. Health & justice, 5(1), 5.

Maschi, T., Morgen, K., Hatcher, S. S., Rosato, N. S., & Violette, N. M. (2009). Maltreated Children's Thoughts and Emotions as Behavioral Predictors: Evidence for Social Work Action. Social Work, 54(2), 135.

Navalta, C. P., McGee, L., & Underwood, J. (2018). Adverse Childhood Experiences, Brain Development, and Mental Health: A Call for Neurocounseling. Journal of Mental Health Counseling, 40(3), 266.

Saltzman, W. R. (2016). The FOCUS Family Resilience Program: An Innovative Family Intervention for Trauma and Loss. Family Process, 55(4), 647–659. https://doi.org/10.1111/famp.12250

Sege, R. D., & Harper Browne, C. (2017). Responding to ACEs With HOPE: Health Outcomes From Positive Experiences. Academic Pediatrics, 17, S79.

Stevens, J. (2017, November 1) Aces Science 101 (FAQs) [Blog post] Retrieved from https://www.acesconnection.com/blog/aces-101-faqs

Wade, R., Shea, J. A., Rubin, D., Wood, J. (2014 July 1) Adverse Childhood Experiences of Low-Income Urban Youth. Pediatrics Vol. 134 Issue 1. Doi: 10.1542/peds.2013-2475