

Identifying connections between adverse childhood events and substance use disorders

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Physical and sexual abuse, having parents who misuse substances, and witnessing violent crime are tragic events that don't remain locked in a single point in time. Rather, they are termed adverse childhood

experiences (ACEs) and [64% of American adults who participated in a recent survey reported experiencing](#) at least one ACE prior to turning 18 years old.

The wake of these events can extend into adulthood and include harmful behaviors such as self-medicating—which one new study found is akin to adding fuel to an already burning fire.

This research, published in [Nature Human Behavior](#), shows that individuals exposed to ACEs are at increased risk of developing mood, anxiety, and [substance use disorders](#). In part, the substance use disorder risk is related to the use of alcohol or drugs to self-medicate mood and anxiety disorders.

Henry Kranzler, MD, a professor of Psychiatry and the director of the Center for Studies of Addiction in the Perelman School of Medicine at the University of Pennsylvania, co-authored the work. He and his colleagues found that people with these [mental health conditions](#) reported experiencing more ACEs and lacking [protective factors](#), such as close family connections, that can mitigate their harms.

However, according to Kranzler, there are multiple entry points. "These findings suggest that multiple pathways lead to mental health conditions after exposure to childhood adversity," Kranzler said.

Prevalence of adverse childhood events

The axiom "kids are resilient" continues to be tested, and sometimes broken, as the world continues to adapt to the impact of remote learning, stunted social-emotional development, and a spectrum of issues weighing on children during the past few years.

That spectrum includes the impact of ACEs on children across the country. According to the Centers for Disease Control and Prevention, three in four [high school students](#) reported experiencing at least one ACE during the pandemic and were more likely to report poor mental health or suicidal behavior.

Other research has shown that [adverse childhood experiences](#) can influence negative behavior into adulthood, as well as detailed the significant economic impact of ACEs.

One recent study put the national economic burden of ACEs-related adult health conditions at \$14.1 trillion annually (\$183 billion in direct medical spending and \$13.9 trillion in lost healthy life-years), or \$88,000 per affected adult annually and \$2.4 million over their lifetime.

Finding the fire before it spreads

The group led by Kranzler examined associations among ACEs, mood or anxiety disorders, and substance dependence in 12,668 individuals—42.5% Black and 42.1% white) and compared two primary hypotheses: self-medication (using substances to cope with trauma) and substance-induced psychiatric disorders (mental health issues caused by substance use).

Stronger support was found for the self-medication hypothesis, suggesting that interventions focusing on coping skills and emotional resilience may help reduce the risk of future mental health issues in children exposed to ACEs.

"Earlier intervention is key," added Rachel Kember, MSc, Ph.D., an assistant professor of Psychiatry and study co-author. "The findings provide a better understanding of how it may be best to intervene based on an individual's specific needs."

Genetic factors also play a role, with some individuals having a higher genetic predisposition for developing substance use, mood, or anxiety disorders. The interaction between genetic risk and childhood adversity influences the development of mental health disorders, highlighting the importance of understanding different pathways and designing early interventions to promote emotional regulation and coping skills.

"Given these results, it's crucial to prioritize efforts to reduce children's exposure to early traumatic experiences," said study co-author Christal Davis, Ph.D., a postdoctoral fellow at the Corporal Michael J. Crescenz VA Medical Center (VAMC). "This would enhance access to protective factors, which could prevent the need for future mental health interventions."

Because there are multiple pathways to the development of mental health conditions following exposure to childhood adversity, regular screening for ACEs and targeted interventions to improve emotional regulation and other coping skills, may help to reduce the harmful impacts of childhood adversity.

According to Kranzler, greater priority should be placed on both reducing children's exposure to early traumatic experiences and increasing their access to protective factors. For example, safe, stable, and nurturing relationships, positive friendships and peer networks, and supportive school environments that promote learning and socialization, may help prevent the need for future mental health interventions.

Though the team expressed caution—more data are necessary to chart firmer next steps due to the novelty of the dataset the team analyzed—it does represent a first step.

"The findings underscore the need for efforts to prevent or intervene early with individuals who experience adverse childhood events, as they

have the potential to prevent or limit the development of a variety of psychiatric disorders, including substance dependence," Kranzler said.

More information: Henry R. Kranzler et al, Gene × environment effects and mediation involving adverse childhood events, mood and anxiety disorders, and substance dependence, *Nature Human Behaviour* (2024). [DOI: 10.1038/s41562-024-01885-w](https://doi.org/10.1038/s41562-024-01885-w)

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