Research links childhood deprivation to accelerated biological aging later in life

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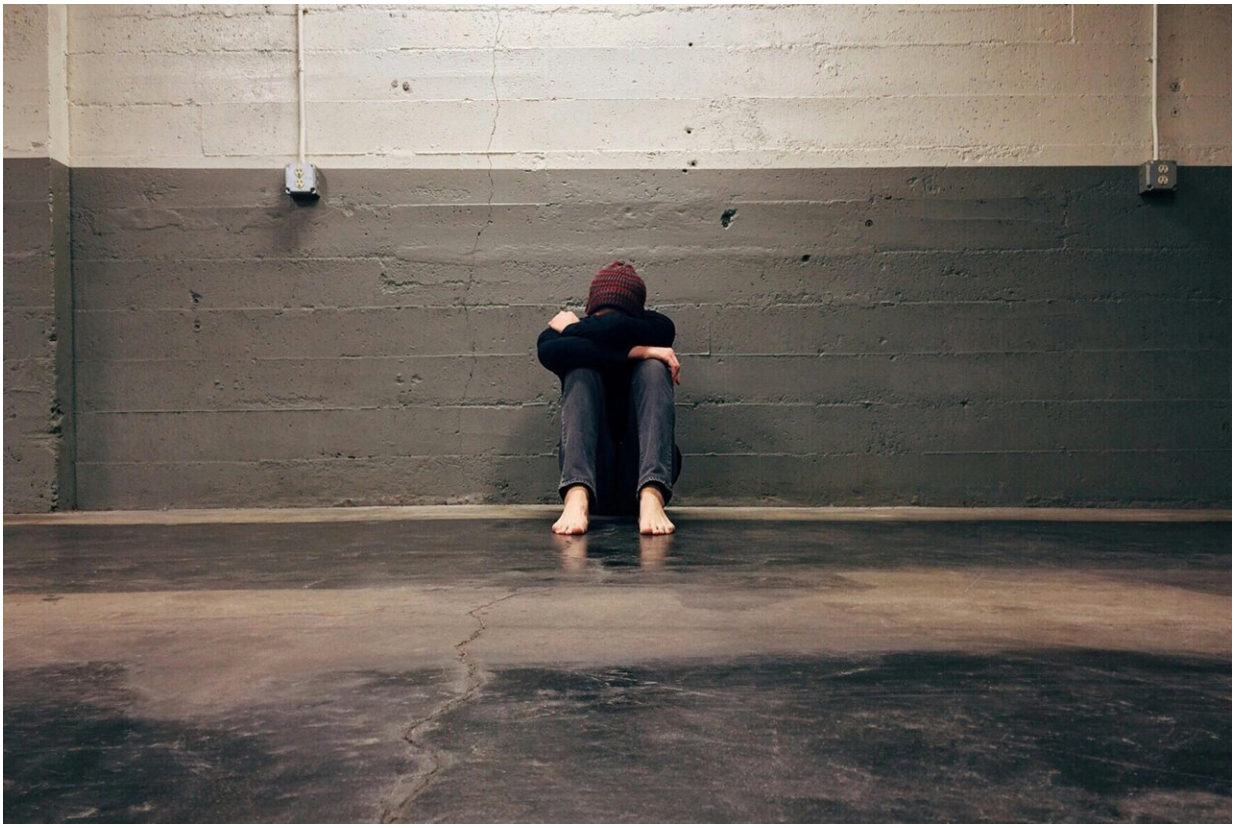

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By using advanced epigenetic aging techniques and new data from older adults, a team of researchers found that being deprived of a nurturing childhood environment is associated with accelerated biological aging at

older ages.

Led by Lauren Schmitz, a professor in the La Follette School of Public Affairs at the University of Wisconsin–Madison, the researchers recently published their findings in the *American Journal of Epidemiology*.

"Although previous research has shown a relationship between early life adversity and epigenetic age acceleration among children, this study is among the first to connect the biological age of older adults with these types of early life experiences," Schmitz says. "This could be an important insight into how childhood experiences may contribute to our mortality risk."

This study used DNA samples and interview data from 842 adults between ages 55 and 94. It looked at generally accepted measures of early life adversity known as threat and deprivation.

Threat involves physical, emotional or sexual harm or the threat of harm. Deprivation involves the absence of appropriate physical or emotional stimulation or nurturing.

Experiences of socio-emotional or physical abuse and trauma in childhood have been linked to accelerated pubertal development, cellular aging and compromised brain development, which may contribute to poorer mental and physical outcomes across the life course.

While earlier studies found a link between threats experienced in early life and epigenetic age acceleration in children, the study led by Schmitz shows that this relationship may not persist into adulthood. On the other hand, the researchers found that experiences of deprivation in childhood may lead to age acceleration later in life.

While they don't know for sure why epigenetic age accelerates in cases of deprivation but not threat, one possible reason could be that the effects of deprivation manifest later in life while those of threat may decline over time as people get further away from the acute childhood trauma.

The study also found that smoking acted as a partial mediator in the association between deprivation in early life and accelerated epigenetic aging later in life, meaning that lifestyle behaviors may act as a downstream pathway linking childhood deprivation and biological aging.

"Epigenetic research is rapidly advancing in its ability to document the negative impacts of early life adversity on adult health and well-being. Recent studies have shown links between these childhood experiences and inflammation, metabolic functioning, biological aging, psychological disorders and even mortality," Schmitz says. "Our hope is that this paper can contribute to this literature as we increase our understanding of how early life experiences may accelerate aging all the way down to a cellular level."

More information: Lauren L Schmitz et al, Associations of Early-Life Adversity With Later-Life Epigenetic Aging Profiles in the Multi-Ethnic Study of Atherosclerosis, *American Journal of Epidemiology* (2023). DOI: 10.1093/aje/kwad172

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