

Epigenetic modifications, clinical symptoms, and evidence of resilience associated with the trauma and stress of enslavement and institutionalized racism

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Abstract

The large-scale capture, forcible kidnapping, and subsequent forced labor associated with the historic enslavement of Africans in the Americas exerted tremendous stress on their biologies. These stresses provided the most important substrate for selection in New World African populations. The environmental and social conditions of enslavement, post-civil war reconstruction, and Jim Crow racism in the United States were a connected sequence of traumatic events that have had an enduring, multigenerational impact on African Americans and their descendants. Enslavement is manifested partially in elevated cortisol levels and, in turn, have served as catalysts for other adverse health outcomes. Elevations in circulating cortisol levels have been indicated as a significant influencing factor in psychological stress disorders such as depression and post-traumatic stress disorder. Stress responses were reinforced no doubt by the long-term food insecurity associated with enslavement. Chronic food deprivation and food instability are thought to have further exacerbated the trauma associated with other adversarial environmental effects during this period. The impact of these constraints during key stages of the lifecycle are examined and the resulting clinical symptoms and epigenetic changes documented. There is evidence of a link between intergenerational epigenetic trauma, environmental adversity, and resilience. Resiliency is an adaptive response associated with lower psychopathology and a suite of specific physiological changes including alterations in cortisol levels regulating the inflammatory immune response and resistance to telomere shortening in response to stress.

The feedback loops linking environment and human genomes are modified by resilient behaviors. In Legacy African Americans, resilience has emerged as a continuum of responses within the context of family, community, and religious beliefs as a consequence of Intergenerational exposures to 250 years of chattel slavery followed by 150 years of systemic discrimination. This resilience has ameliorated but not eliminated the impact of this trauma over approximately 16 generations of exposure. We suggest that resilience can exhibit a range of sustainability with protracted resilience involving deep behavioral modifications and concomitant physiochemical changes whereas superficial resilience may also show surface behavioral adjustments but is skin-deep and lacks the consistent physiochemical alterations of successful long term adaptation.

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