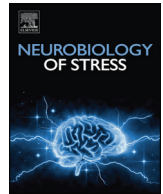


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# Neurobiology of Stress

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## Foreword



Substantial data have converged on the concept that adverse events occurring during critical periods of brain development modulate the vulnerability to mental illnesses, including substance use disorders (SUD). Like stressors, drugs can also interfere with neurodevelopmental programs and alter the course of brain maturation in a way that favors maladaptive behaviors. The reviews in this issue reinforce the concept that stress and development interact to shape vulnerability to drug experimentation, SUD and their trajectories. They also call attention to the complex nature of these interactions and the challenge of disentangling and harmonizing findings so that they lead to effective prevention and treatment strategies. To meet these challenges NIH is leading bold inter-institute collaborative initiatives to understand normal brain developmental and cognitive trajectories and how these are shaped by genetic, environmental, social and economic variables. An ultimate goal is to elucidate how these factors determine vulnerability and/or resilience to mental illness and SUD. The first initiative, the Adolescent Brain Cognitive Development (ABCD) study is currently in its third year and has recruited nearly 12,000 individuals aged 9–10 that will be followed for 10 years with comprehensive standardized assessments of brain structure and function using imaging tools, cognitive and behavioral processes using neuropsychological batteries and cognitive testing, physical activities and circadian rhythms using wireless technologies along with in depth characterization of physical,

social and economic environments. The Healthy Brain and Child Development (HBCD) study, a 10-year longitudinal study parallels the ABCD effort but, instead of targeting adolescence transitioning into young adulthood, will assess brain development from infancy into pre-adolescence. Both ABCD and HBCD will make the data freely available through an open access platform so that the wider research community can use the data to address a broad range of research questions. Together, these studies offer a unique opportunity to collect a rich data set that can be mined to advance our understanding of how drugs, genes and social stressors impact brain development of children from the womb to adolescence and thereby shape their behavior in adulthood. These studies will also provide valuable data regarding variability in normal brain developmental trajectories and deviations associated with neuropathology to help develop personalized interventions to remediate them.

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