

NIH's Adolescent Brain Cognitive Development (ABCD) Study

Alcohol Research: Current Reviews Editorial Staff

Adolescence is the stage of life during which most people begin using alcohol, and it is also a time of considerable social, psychological, and physiological change. The brain, particularly the frontal cortex, continues to develop throughout adolescence and does not fully mature until early adulthood. Adolescent alcohol exposure can impair brain development, compromise short- and long-term cognitive functioning, and increase the likelihood of developing alcohol-related problems during adolescence and later in life. Furthering our understanding of the developing brain—as well as how differences in brain structure and function that exist prior to alcohol and other substance use contribute to substance use disorders—is a high priority for the National Institutes of Health (NIH).

In September 2015, NIH launched the Adolescent Brain Cognitive Development (ABCD) Study, the largest long-term study of brain development and child and adolescent health in the United States. The ABCD Study will recruit more than 11,000 9- to 10-year-olds to capture data before children begin using alcohol or other addictive substances. It will integrate structural and functional brain imaging; genetic testing; and neuropsychological, behavioral, and other health assessments of study participants conducted over a 10-year period, yielding a substantial amount of information about healthy adolescent brain development. Data gathered from participants will allow the creation of



baseline standards for typical brain development (similar to those that currently exist for height, weight, and other physical characteristics). These data are expected to illuminate how brain development is affected by substance use and other childhood experiences, such as patterns of sleep, use of social media, and engagement in sports and with video games. It may also reveal neurobiological, cognitive, and behavioral precursors of substance misuse and other risk behaviors, and ultimately inform preventive and treatment interventions.

The ABCD Consortium consists of a Coordinating Center, a Data Analysis and Informatics Center, and 21 research sites across the country. Recruitment, which began in September 2016, is expected to span 2 years. ABCD workgroups have established standardized and harmonized assessments of neurocognition, physical and mental health, social and emotional functions, and culture and environment. They also have established multimodal structural and functional brain imaging and bioassays. Brain imaging and biospecimen collection for genetic and epigenetic analyses

will be done every other year, and the remaining assessments will be conducted semiannually or annually.

One important goal of the ABCD Study is to create a unique data resource for the entire scientific community by embracing an open science model. Curated, anonymized data will be released annually to the research community, along with the computational workflows used to produce the data, beginning 1 year after data collection begins.

ABCD is supported by the National Institute on Alcohol Abuse and Alcoholism, the National Institute on Drug Abuse, the National Cancer Institute, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, the National Institute of Mental Health, the National Institute on Minority Health and Health Disparities, the National Institute of Neurological Disorders and Stroke, the NIH Office of Behavioral and Social Sciences Research, and the Division of Adolescent and School Health at the Centers for Disease Control and Prevention.

For more information, visit <http://abcdstudy.org/index.html>.