News reports of college drinking tragedies, and concerns about increased access to alcohol in the home during the pandemic, make clear that COVID-19 has provided no reprieve from the problems of underage drinking. A perennial public health priority, alcohol misuse by young people increases the likelihood of myriad serious consequences, including altered brain development, academic problems, unsafe sexual behavior, physical and sexual assault, traffic crashes, injuries, overdoses, and alcohol use disorder (AUD).

To be sure, efforts to reduce underage drinking have seen success in recent decades. Epidemiological data from the annual Monitoring the Future survey, funded by the National Institute on Drug Abuse, show that by 2020, proportional declines in the prevalence of binge drinking, following recent peaks reached in the 1990s, were 66 percent, 60 percent, and 47 percent for grades 8, 10, and 12, respectively.

George. F. Koob, Ph.D., Director of the National Institute on Alcohol Abuse and Alcoholism (NIAAA), notes, “We are indeed making progress at reducing alcohol misuse among adolescents and young adults; however, the declines have been larger among males than females, and trends in serious alcohol-related harms have not matched the trends in drinking prevalence. Also, drinking to cope with stress is a growing concern.”

Recent and ongoing studies supported by NIAAA indicate that investigations of the relationship between childhood trauma and alcohol misuse, and the neural substrates through which that relationship is mediated, will provide important avenues for continued progress against underage drinking, its subsequent problems, and their potential treatment. Many of these studies include examination of emotional stress and mental health problems, such as post-traumatic stress disorder (PTSD), that frequently co-occur with AUD.

For example, in a 2020 study led by scientists at Arizona State University, researchers found that recollections of childhood trauma (such as sexual and emotional abuse) may contribute to PTSD symptoms and impaired control over drinking among college students. The researchers found that reducing PTSD symptoms may help individuals regain control over their drinking. Also last year, researchers at Virginia Commonwealth University reported that young adults with a history of childhood maltreatment may use alcohol to cope with trauma-related negative emotions. The study’s findings suggest that targeting emotional distress in people exposed to trauma in childhood may be helpful in preventing and treating alcohol-related problems in this vulnerable population. In a recent analysis conducted by the NIAAA-supported Collaborative Study on the Genetics of Alcoholism, researchers showed that having a family history of AUD and exposure to trauma during adolescence may be associated with increased PTSD and AUD symptoms and poor problem-solving abilities in adulthood.

NIAAA supports the National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA), a major research initiative established to determine the effects of alcohol misuse on the developing adolescent brain and to examine brain characteristics that predict AUD. In a recent study, researchers used NCANDA data to investigate the relationships among childhood trauma, functional brain connectivity, impaired executive function, and future binge drinking during adolescence. Led by scientists at the University of California San Diego, the study found that functional brain networks, particularly from regions important for cognitive and sensorimotor control, explain the relationship between childhood trauma and impaired executive function and are important for predicting binge drinking. Age, severity of childhood trauma, extent of executive function deficits, and functional brain connectivity together were useful in accurately predicting binge drinking one to four years after research participants were initially assessed for alcohol misuse.

Another NCANDA study recently demonstrated that adolescent alcohol misuse and early-life trauma led to increased hippocampus growth and decreased amygdala growth with age. The hippocampus
and amygdala are brain regions that regulate goal-directed behaviors, inhibition, memory, anxiety, and fear responses. NCANDA investigators have also demonstrated that non-drinking or low-drinking adolescents who reported experiencing trauma and symptoms of post-traumatic stress escalated their alcohol intake during a 4-year followup period more quickly than adolescents who did not experience trauma. Taken together, these NCANDA findings demonstrate a relationship between early adverse experiences, brain development, and alcohol misuse, and suggest that interventions that target trauma may be beneficial in preventing future alcohol misuse and AUD.

NIAAA-supported research continues to build a solid foundation for the development of unique strategies for treating alcohol problems that arise during the developmentally risky period of adolescence. Recently, NIAAA issued a Notice of Special Interest to expand research on how treatment strategies can be tailored for adolescents. These strategies include behavioral treatments that take into account the developmental, biological, neurocognitive, psychological, emotional, and social needs of youth, as well as intervention approaches that account for comorbidity, cultural, and other factors.

“Prevention and treatment strategies grounded in a developmental framework that takes into account early life stress will help us maximize the odds that individuals make it into young adulthood cognitively and emotionally prepared for the rigors of adult life,” says Dr. Koob.

He adds that the unprecedented stressors experienced by young people during the COVID-19 pandemic will linger to some degree, even as society begins to contemplate the potential end of the pandemic. “Current public health measures, and the uncertainties and anxieties they engender about the future, lost income, and social isolation, will be with us for a while longer. And the transition to a post-pandemic reality will itself be a likely source of new stressors and anxieties as society adjusts to a new ‘normal,’ underscoring the importance of ongoing NIAAA investigations into the relationship between stress and alcohol misuse.”

References: