

Brain injury in kids might lead to alcohol abuse

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Researchers at Ohio State University have surveyed previous studies to

investigate the relationship between traumatic brain injuries and alcohol abuse. They found evidence that traumatic brain injuries in children and adolescents could be a risk-factor for alcohol abuse in later life.

When we think of the link between [alcohol](#) and traumatic brain injuries, we probably think of a person's increased risk of injury while drunk. Alcohol intoxication is indeed a significant risk factor for traumatic brain injuries, and one study has reported that alcohol use is involved in as many as 50% of emergency department admissions for traumatic brain injuries in the US.

Intriguingly, an animal study conducted by Zachary Weil, a researcher at Ohio State University, made him suspect that the converse might also be true, particularly in young people. "We recently reported that mice that experience a [traumatic brain injury](#) as juveniles drink significantly more alcohol as adults," says Weil. "When we started to look at the human literature it became clear that alcohol and traumatic brain injuries were very connected. There were some hints that brain injuries might actually make someone more susceptible to alcohol abuse."

Weil was inspired to look more closely at the past literature, and what he and his team found was recently published in *Frontiers in Behavioral Neuroscience*. The researchers found that it was difficult to tell if their hypothesis was true in adults. "So many adults that have brain injuries are already heavy drinkers and therefore it's really hard to tell for sure if a [brain injury](#) has affected their drinking," explains Weil.

However, for people who suffer a traumatic brain injury in childhood or adolescence, there was a clearer link to alcohol abuse problems in later life. For example, children under 5 years of age who suffer a traumatic brain injury are over 3.6 times more likely to exhibit [substance abuse](#) as teenagers, compared with uninjured children.

So, why would a traumatic brain injury potentially lead to alcohol abuse? The team found evidence in the literature that brain injury can negatively affect factors that are associated with reducing alcohol abuse. For example, forming stable romantic relationships, getting involved in extracurricular activities and maintaining full-time employment are all associated with a reduced risk of substance abuse, but all are less likely in brain injury survivors.

Traumatic brain injuries can also make people more impulsive and less aware of the consequences of their actions, and there is also evidence that brain injury survivors may use alcohol to help deal with the negative consequences of their injury.

Beyond its psychological effects, traumatic brain injury can cause significant inflammation in the brain. Alcohol also generates neuroinflammation, and evidence from animal studies suggests that this inflammation might drive further drinking.

Finally, traumatic brain injuries can damage specific neurochemical systems in the brain that are vulnerable during childhood development, such as the dopaminergic system. A dysfunctional dopaminergic system is a risk factor for substance abuse, suggesting another potential link between childhood brain injury and alcohol abuse in adulthood.

So, how can we address the problem? "This is an important issue because drinking after brain [injury](#) is associated with health problems and poorer outcomes. Specifically targeting substance abuse problems in the brain-injured population could do a lot of good," says Weil.

The researchers caution that the link between brain injuries and alcohol abuse has not yet been completely established and more work is needed. "This has not been completely confirmed in humans, but there is a lot of suggestive evidence," explains Weil.

More information: Zachary M. Weil et al, Traumatic Brain Injuries during Development: Implications for Alcohol Abuse, *Frontiers in Behavioral Neuroscience* (2017). [DOI: 10.3389/fnbeh.2017.00135](https://doi.org/10.3389/fnbeh.2017.00135)

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