Exposure to alcohol before birth may make drinking more appealing to teens

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A new study suggests that fetal alcohol exposure (FAE) reduces the taste system's responsiveness to the bitter flavor and burning sensation of many varieties of alcoholic beverages. These factors make alcohol unappealing to some people, but, for reasons that are unclear, are less of a deterrent in young people exposed to alcohol before birth. The study is published ahead of print in the *Journal of Neurophysiology*.

Previous studies have found that FAE reduces the sense of smell of alcohol and that teens exposed to alcohol in utero have an increased risk of alcohol abuse. "It is possible that FAE makes the flavor of alcohol less aversive. This could increase the risk of adolescents experimenting with alcohol and developing a pattern of abuse," the research team wrote.

The researchers compared oral sensory responses to alcohol and its flavor components, namely bitter (quinine), sweet (sugar) and burning and irritation (capsaicin and mustard oil) in an adolescent rat model of FAE and control rats. They recorded responses from two nerves that convey input about taste to the brain and one nerve that conveys input about oral burning and irritation to the brain (trigeminal nerve).

Compared with control rats, the taste nerves of FAE rats showed weaker responses to alcohol and quinine taste during adolescence. The reduced responses of these taste nerves to quinine persisted into adulthood, implying lifelong alterations in bitter taste function. The FAE rats also had reduced trigeminal responses to alcohol, capsaicin and mustard oil during adolescence.

"Our results demonstrate that FAE reprograms development of the rat's peripheral taste and trigeminal systems," the research team wrote. More study is needed to determine exactly how alcohol exposure before birth reprograms different parts of the nervous system, the researchers noted.

More information: John I Glendinning et al. Fetal alcohol exposure reduces responsiveness of taste nerves and trigeminal chemosensory neurons to ethanol and its flavor components, *Journal of Neurophysiology* (2017). DOI: 10.1152/jn.00108.2017