

Frustration is an Additional Factor of Addiction Treating Depression in People with Dementia

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The current study focused on drug addiction research has pioneered a new way to study frustration as a factor in substance use disorders. Traditional addiction research has focused on three aspects of substance use disorders: craving, impulsivity, or habit. Scientists hypothesized that a fourth factor, frustration, could also lead to escalation of drug use and addiction.

The Psychopharmacology paper noted that research into the role of frustration and substance use disorders is sparse, but a number of studies suggest that persons with substance use disorders have lower frustration tolerance. Studies have shown that sensitivity to frustration correlates with relapse among those with substance use disorders.

The UTMB studies used a rat model to focus on frustration-related behavior. Rats can be trained to press a lever for food or drugs (reinforcers), and frustration is defined as when a subject is unable to achieve a reinforcer, receives less of a reinforcer than anticipated, or has to work harder to achieve a reinforcer.

An example of frustration behavior is when someone can't get the channel on the TV to change or when an elevator takes too long to arrive. People will often respond to both situations by pressing

the button repeatedly or holding the button longer with repeated attempts. This typical human response to frustration is the same in rats. In our study, rats were trained to press a lever for delivery of either a sucrose pellet or an intravenous infusion of a synthetic opioid. If they didn't get what they expected, they would press the lever more frequently and for longer periods of time.

When a rat presses a lever repeatedly that was supposed to deliver a banana-flavored sucrose pellet, but the pellets never arrive, they hold the levers down longer as the frustration builds.

Researcher said the study showed all rats would press a lever for intravenous infusions of fentanyl, a synthetic opioid, but about 10% of rats would escalate their intake of fentanyl to about double that of the average rat.

"Even as the escalating rats take massive amounts of drug, their bar presses get longer (in some cases up to 10 minutes long), even though long bar presses do not increase the amount of drug delivered," Vasquez said, adding that the conclusion is that these susceptible rats, even though they are taking as much fentanyl as their bodies can handle, are frustrated that they are still not getting enough drug to satisfy them.

The study has obvious implications for future studies of opioid use disorder and will help scientists understand how frustration, as well as craving, impulsivity and habit can lead to opioid escalation.

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