

The Effect of Binge Eating Disorder in Adolescent Mice on Opioid Drug Response in Adult Mice

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Abstract: Binge eating disorder (BED) is when an individual is chronically overeating, or bingeing, as well as having a feeling of being out of control of their eating. BED is a common issue among adolescents, but despite the high prevalence of this disorder, there are few preclinical studies that explore the outcomes of the disorder. BED is similar to Substance Abuse Disorder (SUD) as both disorders are characterized by their binge episodes and involve similar neuronal pathways. Our laboratory has sought out to explore the relationship that BED has on SUD because of the similarities. Previous findings in our laboratory suggest that binge eating in adolescents potentiates cocaine reward and impulsivity in adult mice. To further explore the relationship between SUD and BED, this study will examine the effects of binge eating on response to opioids. Preliminary results show that the binge eating mice show more opioid reward. This suggests that morphine is more rewarding to mice who have developed binge eating disorder. Additionally, the binge eating condition shows greater withdrawal-induced symptoms, this suggests that adolescent binge eating increases morphine withdrawal. Additionally, analysis of neuronal activity demonstrates an increase in activity in the hypothalamus in binge eating mice. This suggests that binge eating leads to hyperactivity in the hypothalamus. Adolescent binge eating increases vulnerability to opioid addiction, as binge eating potentiates morphine reward and withdrawal. Understanding the risks associated with adolescent binge eating will allow for future studies on treatment and intervention strategies for BED.