

# Developmental Trajectories of Reward, Goal-Directed, and Habitual Brain Circuits Are Differentially Linked to Alcohol Use in Youth

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## References

- Everitt, B. J., & Robbins, T. W. (2016). Drug addiction: updating actions to habits to compulsions ten years on. *Annual review of psychology*, 67(1), 23-50.
- Balleine, B. W., & O'doherty, J. P. (2010). Human and rodent homologies in action control: corticostriatal determinants of goal-directed and habitual action. *Neuropsychopharmacology*, 35(1), 48-69.
- Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of addiction. *Neuropsychopharmacology*, 35(1), 217-238.
- Parr, A. C., Calabro, F., Larsen, B., Tervo-Clemmens, B., Elliot, S., Foran, W., ... & Luna, B. (2021). Dopamine-related striatal neurophysiology is associated with specialization of frontostriatal reward circuitry through adolescence. *Progress in Neurobiology*, 201, 101997.
- Dawson, D. A., Goldstein, R. B., Patricia Chou, S., June Ruan, W., & Grant, B. F. (2008). Age at first drink and the first incidence of adult-onset DSM-IV alcohol use disorders. *Alcoholism: Clinical and Experimental Research*, 32(12), 2149-2160.
- Brown, S. A., Brumback, T. Y., Tomlinson, K., Cummins, K., Thompson, W. K., Nagel, B. J., ... & Tapert, S. F. (2015). The National Consortium on Alcohol and NeuroDevelopment in Adolescence (NCANDA): a multisite study of adolescent development and substance use. *Journal of studies on alcohol and drugs*, 76(6), 895-908.
- Brown, S. A., Myers, M. G., Lippke, L., Tapert, S. F., Stewart, D. G., & Vik, P. W. (1998). Psychometric evaluation of the Customary Drinking and Drug Use Record (CDDR): a measure of adolescent alcohol and drug involvement. *Journal of studies on alcohol*, 59(4), 427-438.
- Gordon, E. M., Laumann, T. O., Adeyemo, B., Huckins, J. F., Kelley, W. M., & Petersen, S. E. (2016). Generation and evaluation of a cortical area parcellation from resting-state correlations. *Cerebral cortex*, 26(1), 288-303.