The Unrested Teenage Brain:  
The Effects of Poor Sleep on Adolescent Brain Development

Guest Lecture by Adriana Galván, Associate Professor Jeffrey and Wenzel Term Chair in Behavioral Neuroscience UCLA Department of Psychology, UCLA Brain Research Institute  
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Abstract: The “adolescent sleep deprivation epidemic” is growing. Less adolescent sleep is of significant concern among parents, educators, and policymakers because it increases myriad negative consequences in academic, emotional, and psychological domains. Surprisingly, how it contributes to ongoing brain maturation and problematic impulsive behavior during adolescence remains unknown. Although public and scientific attention focuses on sleep duration, we report that variability in sleep disruption, not duration, in fifty-five adolescents (ages 14-18) yielded significant differences in functional connectivity between the prefrontal cortex and default-mode network, which undergo essential maturation during adolescence. Sleep disruption was predictive of impulsivity among adolescents with low, but not high, connectivity, suggesting that stronger neural connectivity buffers the relation between sleep disruption and impulsivity. Pillow comfort uniquely predicted sleep disruption over age, sex, and income, a surprising and promising advance ripe for intervention. This suggests that sleep may be a missing, but treatable, piece in the adolescent impulsivity puzzle.

Adriana Galván, Ph.D. is an Associate Professor of Psychology and faculty member of the Brain Research Institute at UCLA. She is also the Director of the Developmental Neuroscience Laboratory and an executive member of the Center for Cognitive Neuroscience at UCLA. The overall goal of her laboratory is to understand adolescent behavior by using neuroimaging methods to study the changing adolescent brain. Specifically, she examines the role of stress, sleep habits, puberty, and social relationships on adolescent risk-taking and decision making. Her work has been disseminated broadly in academic journals including The Journal of Neuroscience, Proceedings of the National Academy of Sciences, and Neuron, and funded by the National Institute of Health, National Science Foundation, William T. Grant Foundation, The Jacobs Foundation, and the MacArthur Foundation Research Network on Law and Neuroscience. Her research has been featured in several media outlets, in a TEDx talk on the adolescent brain and cited in U.S. Supreme Court cases regarding juvenile justice (Graham v. Florida, 2010; Miller v. Alabama, 2012). Dr. Galván received her B.A in Neuroscience from Barnard College, Columbia University (2001) and her Ph.D. from Cornell Medical School (2006). She conducted her postdoctoral research fellowship at the UCLA Semel Institute for Neuroscience and Behavior. She is the recipient of the American Psychological Association Boyd McCandless Young Scholar Award, the Jacobs Foundation Young Scholar Award, a Network Scholar Award of The MacArthur Foundation Research Network on Law and Neuroscience, and the William T. Grant Foundation Scholar Award.