



INSIDE THIS ISSUE

Sleep and Cognitive Development

Teen brains need more
Zzzzzzzz



Brain development even affects the way teens sleep. Adolescents' normal sleep patterns are different from those of children and adults. Teens are often drowsy upon waking, tired during the day, and wakeful at night.

Until the age of 10, most children awaken refreshed and energetic. In adolescence, the brain's biological clock, or circadian rhythm, shifts forward. Melatonin secretions, which trigger sleepiness, start later at night and turn off later in the morning. This natural shift peeps up adolescents at the traditional weekday bedtime of 9 or 10 p.m. and can explain why it is so hard to rouse them at sunrise. In contrast, circadian rhythms

in middle-aged people tend to swing backward, and many parents struggle to stay awake when their adolescent children are at their most alert.

Teenagers actually need as much sleep or more than they got as children—nine to 10 hours are optimum. Most adolescents are chronically sleep-deprived, averaging a scant six to seven hours a night. Part of the blame can be placed on early starting times for school, which, coupled with many teens' 11 p.m. and midnight bedtimes, result in a considerable sleep deficit.

Too little sleep can result in uncontrolled napping (either in class or, more dangerously, behind the wheel), irritability,

inability to do tasks that are not exciting or of a competitive nature, and dependence on caffeine drinks to stay alert.

Sleep debt also has a powerful effect on a teen's ability to learn and retain new material, especially in abstract subject areas such as physics, philosophy, math, and calculus.

Battling biology can be daunting, but adults can help teenagers get enough sleep by keeping TVs and electronic gadgets out of their bedrooms, switching to caffeine-free drinks in the evening, and getting them to wind down activity by a reasonable hour. Catch-up sleep on weekends is a second-best option because it can confuse the brain as to when night-time occurs and is not as restorative as regular slumber.



If you would like to delve deeper into the teen sleep and cognitive development issues presented here, and in *The Teen Years Explained: A Guide to Healthy Adolescence*, the following provide additional information and resources.

Teens and Sleep

Baucum, D., & Craig, G. (1999). *Human Development*. New York, NY: Prentice Hal, 2-20.

Public Broadcasting Service. (2002). *Inside the teenage brain: Adolescents and sleep*. Retrieved January 18, 2007, from <http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/from/sleep.html>

Public Broadcasting Service. (2002). *Inside the teenage brain: Interview with Mary Carskadon*. Retrieved January 18, 2007, from <http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/interviews/carskadon.html>

Public Broadcasting Service. (2002). *Inside the teenage brain: Introduction*. Retrieved January 18, 2007, from <http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/etc/synopsis.html>

Walrus Magazine. (2006). *Science: The teenage brain*. Retrieved July 19, 2007, from <http://www.walrus-magazine.com/print/2006.11-science-the-teenage-brain/>

Cognitive Development

American Academy of Child and Adolescent Psychiatry. Normal Adolescent Development: Part 1
http://www.aacap.org/cs/root/facts_for_families/normal_adolescent_development_part_i

American Academy of Child and Adolescent Psychiatry. Normal Adolescent Development: Part 2
http://www.aacap.org/cs/root/facts_for_families/normal_adolescent_development_part_ii

American Psychological Association. Developing Adolescents
<http://www.apa.org/pi/cyf/develop.pdf>

For additional resources, please refer to *The Teen Years Explained: A Guide to Healthy Adolescent Development*. Science-based and accessible, this guide is a practical and essential resource for parents and all people who work with young people.

*“Add this book to the
‘must-read’ list.”*
—Karen Pittman,
*Forum for Youth
Investment*



For more information, contact:
Beth Marshall, CHES, DrPH
bmarshall@jhsph.edu

Center for Adolescent Health
Johns Hopkins Bloomberg School of Public Health
615 N. Wolfe St. E4610
Baltimore, MD 21205
Telephone: 443 287 3008
www.jhsph.edu/adolescenthealth

ACKNOWLEDGEMENTS

This publication is an excerpt from *The Teen Years Explained: A Guide to Healthy Adolescent Development* [Authors: Clea McNeely, MA, DrPH and Jayne Blanchard]. The Guide was made possible by funding from the Centers for Disease Control and Prevention (CDC) to the Center for Adolescent Health at the Johns Hopkins Bloomberg School of Public Health, a member of the Prevention Research Centers Program (CDC cooperative agreement 1-U48-DP-000040). We would also like to thank the Charles Crane Family Foundation and the Shapiro Family Foundation for their support for the Guide.