



Later School Start Times Promote Adolescent Well-Being

Moving high school start times can improve student performance and general well-being.

Delaying Start Times

Though comprehensive national statistics on school start times are not available, it is common for American public high schools to begin their instructional day between 7:00-8:00AM. Research has shown that these early bell times are responsible for the discrepancy between how much sleep teens need and how much sleep they get.⁹ When school systems have moved to later start times, they have found that their students get more sleep.^{4,19-20} Numerous studies have been done with schools that have shifted to later start times; while individual differences in communities and research methodology have led to different outcomes, results are almost always positive. Benefits observed from later high school start times include:^{4, 6,9-14, 16, 19-21}

- Increased attendance rates
- Decrease in disciplinary action
- Decrease in student-involved car accidents
- Increase in student GPA
- Increase in state assessment scores
- Increase in college admissions test scores
- Increase in student attention
- Decrease in student sleeping during instruction
- Increase in quality of student-family interaction

These benefits are from studies of delayed start times in schools and districts across the country in Colorado, Connecticut, Kentucky, Minnesota, Missouri, Rhode Island, Virginia, & Wyoming. They have been done with schools in a broad range of developed environments—urban, suburban, and rural.



Sleeping in Adolescence

The optimal amount of sleep for adolescents is approximately 9 ¼ hours nightly.² Surveys show that, while younger children generally get enough sleep, by early adolescence, most do not; this trend continues to worsen throughout the teenage years (See Figure 1). More than half of teens age 15-17 sleep for 7 or fewer hours per school night.

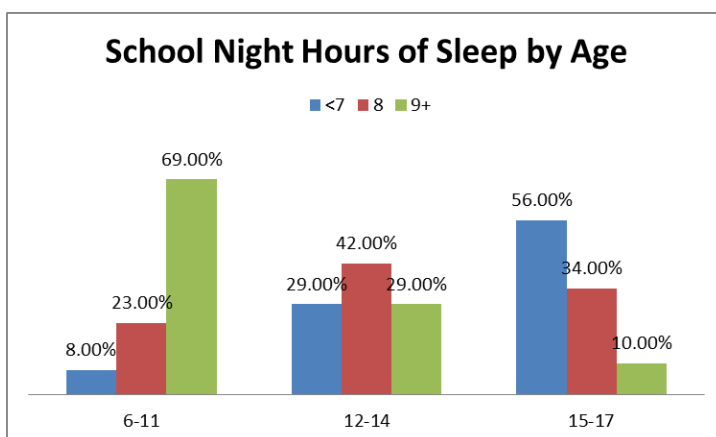


Figure 1: School Night Hours of Sleep by Age Group. While 69% of kids age 6-11 get approximately enough sleep, just 1 in 10 15-17 year olds are. Source: National Sleep Foundation, 2014..

Teens are notorious night owls – generally, they go to bed late in the evening and, when given the opportunity, wake up late in the morning. This tendency has biological and physiological roots. The sleep-wake cycle is governed by both the homeostatic drive for sleep (Process S) and the circadian rhythm (Process C).^{5,8}

- Process S builds during wakefulness and makes you feel tired. This process weakens during adolescence.^{1,3}
- Process C helps the body determine when the right time for sleep is. It naturally shifts later during adolescence. This is called Delayed Phase Preference.¹⁸

Process S and Process C heavily influence mood and learning abilities.¹⁷ While they are interconnected, fixing an issue with one does not mean that an issue with the other will be resolved. That is, simply going to bed earlier does not necessarily make someone less tired in the early morning hours.⁹

Benefits of Sleep

Scientists are still discovering new benefits of sleep. Research has suggested that sleep is vital to almost all areas of human functioning. Some benefits of sleep are listed below.^{6,7,9,16,21}

Sleep leads to increases in/benefits to:

- Memory & learning
- Attention
- Emotional regulation
- Mental health & well-being
- Weight control/Body Mass Index (BMI)

Loss of sleep leads to decreases in/problems with:

- Information retention & cognition
- Student behavior and classroom conflict
- Attendance issues
- Mood regulation

Concerns

Concerns about delayed start times have generally focused less on academic/social/cognitive outcomes and more on logistical complications. Some considerations include:⁹

- Increased cost, congestion, & delays associated with having busses on the road later in the morning
- Inability of parents to rely on older children for afternoon childcare, as the lower schools would have effectively switched schedules with the upper schools.
- Scheduling conflicts for intersarsity/interscholastic events with neighboring jurisdictions that have earlier dismissal.

These issues are surmountable, and, with adequate planning, can be minimized or completely eliminated.

Conclusion

While implementation may be complex, particularly when a change would bring a school's schedule out of sync with neighboring systems, delaying school start times so that adolescents begin their instructional day later provides numerous benefits to the students and their broader community alike.

References

1. Carskadon, M. A. (2011). Sleep in adolescents: The perfect storm. *Pediatrics Clinics of North America*, *58*, 637-647.
2. Carskadon, M. A. (2013). Optimal sleep habits in adolescents. In H. P. A. Van Dongen & G. A. Kerkhof (Eds.), *Encyclopedia of Sleep*, *190*, 86-87.
3. Carskadon, M. A., Acebo, C., & Jenni, O. G. (2004). Regulation of adolescent sleep: Implications for behavior. *Annals of the New York Academy of Sciences*, *1021*, 276-291.
4. *Center for Applied Research and Educational Improvement*. (1998). School start time study. Technical report: Vol. II. Analysis of student survey data.
5. Crowley, S. J., Acebo, C., & Carskadon, M. A. (2007). Sleep, circadian rhythms, and delayed phase in adolescence. *Sleep Medicine*, *8*, 602-612
6. Davison, C. M., Newton, L., Brown, R. S., Freeman, J., Ufholz, L. A., & Smith, J. D. (2012). Systematic Review Protocol: Later School Start Times for Supporting the Education, Health and Well-being of High School Students. *The Campbell Collaboration*.
7. El-Sheikh, M., Bagley, E. J., Keiley, M. K., & Erath, S. A. (2014). Growth in Body Mass Index From Childhood Into Adolescence: The Role of Sleep Duration and Quality. *The Journal of Early Adolescence*.
8. Hagenauer, M. H., Perryman, J. I., Lee, T. M., & Carskadon, M. A. (2009). Adolescent changes in the homeostatic and circadian regulation of sleep. *Developmental Neuroscience*, *31*, 276-284.
9. Kirby, M., Maggi, S., & D'Angiulli, A. (2011). School start times and the sleep-wake cycle of adolescents: A review and critical evaluation of available evidence. *Educational Researcher*. *40*(2), 56-61
10. *National Sleep Foundation*. (2005a). Changing school start times: Arlington, Virginia
11. *National Sleep Foundation*. (2005b). Changing school start times: Denver, Colorado
12. *National Sleep Foundation*. (2005c). Changing school start times: Fayette County, Kentucky
13. *National Sleep Foundation*. (2005d). Changing school start times: Jessamine County, Kentucky
14. *National Sleep Foundation*. (2005e). Changing school start times: Wilton, Connecticut
15. *National Sleep Foundation*. (2014). 2014 Sleep In America® poll - Sleep in the modern family: Summary of findings.
16. Owens JA, Belon K, Moss P. (2010). Impact of delaying school start time on adolescent sleep, mood, and behavior. *Archives of Pediatric & Adolescent Medicine*, *164*(7), 608-14
17. Schmidt, C., Collette, F., Cajochen, C., & Peigneux, P. (2007). A time to think: Circadian rhythms in human cognition. *Cognitive Neuropsychology*, *24*, 755-789.
18. Tarokh, L., & Carskadon, M. A. (2009). Sleep in adolescents. In Squire, L.R. (Ed.). *Encyclopedia of Neuroscience*, *8*, Oxford Academic Press, 1015-1022
19. Vedaa, Ø., Saxvig, I. W., & Wilhelmsen-Langeland, A. (2012). School start time, sleepiness and functioning in Norwegian adolescents. *Scandinavian Journal of Educational Research*, *56*, 55-67
20. Wahlstrom, K. (2002). Changing times: Findings from the first longitudinal study of later high school start times. *NASSP Bulletin*, *86*(633), 3-21.
21. Wahlstrom, K., Dretzke, B., Gordon, M., Peterson, K., Edwards, K., & Gdula, J. (2014). Examining the Impact of Later High School Start Times on the Health and Academic Performance of High School Students: A Multi-Site Study. *Center for Applied Research and Educational Improvement*.

The American Psychological Association is the largest scientific and professional organization representing psychology in the United States. APA is the world's largest association of psychologists, with nearly 130,000 researchers, educators, clinicians, consultants and students as its members.

Our mission is to advance the creation, communication and application of psychological knowledge to benefit society and improve people's lives.

Copyright © 2014, The American Psychological Association. This material may be reproduced in whole or in part without fees or permission provided that acknowledgement is given to the American Psychological Association. This material may not be reprinted, translated, or distributed electronically without prior permission in writing from the publisher. For permission contact APA, Rights and Permissions, 750 First St NE, Washington, DC 20002-4242.

APA materials synthesize current psychological knowledge in a given area. They do not constitute APA policy or commit APA to the activities that may be described therein. This particular fact sheet originated in the APA Children, Youth, & Families Office.