

The Relations Between Sleep, Personality, Behavioral Problems, and School Performance in Adolescents



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KEYWORDS

• Adolescence • Emotion regulation • Personality • School performance • Sleep

KEY POINTS

- Adolescents on average do not get the recommended amount of more than 9 hours of sleep per night.
- Delaying school start times allows adolescents to get more sleep, thereby increasing attendance rates and academic achievement, especially in evening-type individuals.
- Neuroticism, anxiety, type D personality, perfectionism, and impulsivity are risk factors for sleep problems.
- Insufficient sleep in adolescents contributes to problems with emotional-behavioral regulation and, as a consequence, to a range of potentially self-harming and other-harming behaviors, such as drug use, risky driving, hyperactivity, and aggression.
- Insufficient sleep in adolescents also contributes to poor academic achievement.
- The negative effects of insufficient sleep on emotional-behavioral regulation and academic achievement are more pronounced in adolescents from families with lower socioeconomic status.
- Multicomponent treatment programs specifically designed for adolescents have been developed on the basis of cognitive-behavioral therapy for insomnia.

SLEEP NEEDS AND PATTERNS IN ADOLESCENTS

Accumulating empirical evidence suggests that, across different countries and cultures, adolescents do not get the recommended amount of sleep. Although longitudinal studies of sleep needs through puberty have suggested that adolescents require more than 9.0 hours of sleep at night, on average they obtain between 7.5 and 8.5 hours

per night, with approximately 25% of adolescents obtaining fewer than 6.5 hours and only approximately 15% obtaining 8.5 hours or more.¹ As for gender differences, a meta-analysis has indicated that, on school days, girls sleep on average 11 minutes per night more than do boys, and that on nonschool days, girls sleep 29 minutes more.² Across adolescence, sleep time declines on average by 14 minutes per year of age on

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school days and by 7 minutes per year of age on nonschool days, essentially due to a shift toward later bedtimes.^{2,3} On nonschool days, adolescents typically sleep 1.5 hours longer than they do on school days, suggesting that they accrue a sleep debt across the week that is relieved by oversleep on weekends.³

Regarding cultural differences, 2 meta-analyses have found that adolescents from Asian countries sleep significantly less each night than do adolescents from North America, Australia, and Europe, essentially because of later bedtimes.^{2,3} Another recent comprehensive meta-analysis of data on 690,747 children and adolescents from 20 countries has revealed that between 1905 and 2008, sleep duration generally decreased by more than 1 hour per night. However, rates of change varied according to geographic region: whereas sleep duration decreased in Europe (not including Scandinavia and the United Kingdom), the United States, Canada, and Asia, it increased in Scandinavia, the United Kingdom, and Australia.⁴

Apart from intrinsic factors, such as the pubertal shift in chronotype preference from morningness to eveningness⁵ or specific sleep disorders (eg, insomnia, obstructive sleep apnea, restless legs syndrome), a number of extrinsic factors may contribute to insufficient sleep in teens; namely, extracurricular activities, after-school jobs, and homework.¹ For instance, nearly 20% of a sample of high school students indicated spending 20 hours per week or more on extracurricular activities (eg, sports, music, social clubs) and those students also reported significantly later bedtimes and less total sleep time when compared with students who spent fewer than 20 hours in extracurricular activities.⁶ Moreover, almost 60% of this sample of high school students reported having a part-time job and nearly 30% indicated working more than 20 hours per week. As with extracurricular activities, students who worked more than 20 hours per week at a part-time job indicated significantly later bedtimes and less total sleep time when compared with students who worked less than 20 hours per week.⁶ Engaging in extracurricular activities or holding a job also may delay school homework completion, thereby further postponing bedtime.¹

When at home in the evening, adolescents increasingly use electronic devices for information, communication, and entertainment, whereby sleep also may be delayed.⁷ In the hour before going to bed on school nights, 76% of adolescents report watching TV, 44% surfing the Internet or sending instant messages, 40% talking on the phone, and 26% playing electronic or video games.⁸ A review of 36 studies with school-aged

children and adolescents showed that electronic media use is significantly related to delayed bedtime and shorter total sleep time.⁹ Several mechanisms may mediate the effect of electronic media use on sleep: (1) media use may directly displace sleep or other activities related to good sleep hygiene (eg, physical activity); (2) media use may increase sleep-interfering physiologic, affective, and cognitive arousal; and (3) bright light exposure from television and computer screens may delay melatonin secretion, thereby delaying the circadian rhythm.⁹ As might be expected, adolescents reaching pathologic levels of electronic media use run a particularly high risk of suffering from sleep problems.¹⁰

After going to bed late in the evening because of extracurricular activities, jobs, school homework, or use of electronic devices, adolescents typically have to get up early in the morning to attend school, resulting in insufficient sleep. A number of observational and intervention studies have consistently shown that when school start times are delayed by 25 to 85 minutes, bedtimes typically do not change and adolescents get on average 30 to 60 minutes more sleep.^{11–15} In turn, this additional sleep time is associated with higher attendance rates, less sleepiness and dozing in class, lower depression scores, reduced caffeine consumption, better concentration, and higher grades.^{11–15}

PERSONALITY TRAITS AS RISK FACTORS FOR SLEEP PROBLEMS IN ADOLESCENTS

It has been postulated that a number of personality traits might make adolescents and adults vulnerable to developing sleep problems, particularly when under stress.¹⁶ Early research indicated that internalization, or the excessive inhibition of outward behaviors, might entail a state of constant emotional arousal, thereby contributing to sleep disturbance. Accumulating evidence does indeed suggest that poor sleepers often display high scores on internalization, neuroticism (= enduring tendency to experience negative emotional states), anxiety, and perfectionism.¹⁶ In a recent extension of this line of research, it has been found that adolescents with a type D personality, or distressed personality (= tendency to experience negative emotions and, concomitantly, to inhibit self-expression in social interaction), incur an approximately 4 times higher risk of having sleep disturbances.¹⁷ The recent literature also suggests that the relations between personality traits and sleep problems are best conceptualized as bidirectional. For instance, a longitudinal study has shown that sleep-onset problems during

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