

# Last night's sleep in relation to academic achievement and neurocognitive testing performance in adolescents with and without ADHD

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## Abstract

### OBJECTIVES/BACKGROUND:

Objectives were to (1) examine previous night's sleep in relation to next day performance on standardized academic achievement and neurocognitive assessments in adolescents, and (2) explore whether previous night's sleep is differentially associated with testing performance for adolescents with and without attention-deficit/hyperactivity disorder (ADHD).

### PARTICIPANTS/METHODS:

Participants were 300 adolescents (ages 12-14 years; 55% male). Approximately half (53.6%) were diagnosed with ADHD. Adolescents provided ratings of their previous night's sleep quality, sleep duration, and number of night wakings and were administered standardized tests of processing speed and working memory, as well as word reading, numerical operations, and math fluency academic achievement.

### RESULTS:

In analyses controlling for sex, race, medication use, time of testing, and ADHD group status, more night wakings the previous night were associated with significantly lower numerical operations and math fluency achievement scores and marginally lower working memory scores. Previous night's sleep was not associated with processing speed or reading achievement. ADHD status did not moderate sleep in relation to academic/neurocognitive performance. Participants reporting  $\geq 2$  night wakings the previous night had slightly over half a standard deviation lower scores on average compared to participants reporting 0 night wakings.

### CONCLUSIONS:

This preliminary study suggests that previous night's wakings are associated with poorer mathematics performance the next day, regardless of ADHD status. This may be due to the detrimental effect of interrupted and fragmented sleep on attention and executive control. These findings have implications for clinicians and educators when considering contextual factors that may impact academic and neurocognitive testing performance.