**Introduction**

**Adolescents consistently report insufficient sleep and excessive daytime sleepiness**. **The maturational changes leading to delayed bedtime combined with school starting early in the morning were the principal reasons for shortened sleep in adolescence.**

**It is known that an adequate amount of sleep is consistently associated with improved grades at school. Cognitive performance—memory, learning, attention, and functioning—depends on quality of sleep, especially during adolescence.**

**Research analyzing self-reported sleep data has consistently presented associations between sleepiness and a decline in cognitive ability.**

***The goals of the current study were:***

**1. To perform an in-depth examination of objective sleep patterns and sleepiness among adolescents during school vs. non-school days.**

**2. To examine the associations between sleep patterns (actigraphy), sleepiness (KSS), and cognitive performance (PVT and DSST) during school vs. non-school days.**

***Methods***

***KSS, PVT, and DSST*** were measured three times a day (morning, noon, and before bedtime) on two school days and one non-school day.

***Results***

**Night Sleep:** On non-school days, adolescents fell asleep significantly later (the night before), woke up later, had longer sleep latency, longer sleep duration, and had no significant differences in sleep efficiency.

**Sleepiness:** Mixed model analysis revealed a significant difference in KSS between school and non-school days (F(1,334)=8,83, p<.003) as well as between different times of day. On non-school days, adolescents reported lower KSS than on school days. KSS was lower on school-day afternoons than in the morning (p<.001) or night KSS (p<.001). On the night preceding a non-school-day, KSS was significantly higher than morning and afternoon KSS (p<.001).

**Cognitive performance:**

**PVT:** Mixed model analysis found significantly more errors (F(1, 278)=6.47, *p*<.01), higher mean reciprocal reaction time (RT) fastest (F(1, 278)=4.64, *p*<.05; Graph 3), and more lapses (F(1, 278)=6.29, p<.01) on school days than on non-school days.

**DSST:** Subjects offered significantly fewer responses in the morning than at noon or nighttime (F(2, 277)=3.54, *p*<0.05).

***Conclusion***

Actigraphic recordings and subjective sleep reports support a shift among adolescents in sleep-wake patterns toward late evening, a late rising time on school days, and an even later one on non-school days.

About 24% of participants were sleep-deprived (slept less than 7 hours a night); 52% slept between 7-8 hours, and 24% slept longer than 8 hours.

Sleep deprivation led to higher ***KSS*** and poor performance on the ***PVT*** during school, compared to non-school days.