The Consistency and Timing of Sleep Relates to Attentional Control in Early School-Age Children

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Background

Given the relations of attentional control (AC) to many key social and academic outcomes, it is important to identify factors that might be implicated in the development of good AC. Developmentalists have identified sleep as important to AC because it facilitates optimal prefrontal cortex functioning and consequently allows for better attention to goal-oriented tasks (Dahl, 1996). Few studies have examined the association between objectively measured sleep and AC in children.

Hypotheses

We hypothesize that 1) the variability of weekday sleep will be negatively related to AC and 2) average weekday wake times will be positively related to AC.

Method

Participants

53 female and 51 male kindergarten and first grade students from the greater Phoenix area. Half of the students were Hispanic (50%).

Measures

Sleep. Children wore actigraphs, which reliably measures sleep (Acebo et al.,1999), for 5 weeknights. Data were downloaded into Actiware V5.7 (*Actiware,* 2012). Three common measures of sleep schedules were calculated: sleep onset variability, sleep duration variability, and average wake time across five valid weekday nights.

AC. AC was assessed using the Continuous Performance Test (CPT) (NICHD Early Child Care Research Network, 2003).

Results

AC was negatively correlated with variability in sleep onset, marginally negatively correlated with variability in sleep duration and positively correlated with mean wake times.

Table 1. Bivariate correlations between sleep schedules and AC

	1.	2.	3.	4.
1. Var. Onset	-			
2. Var. Duration	0.87**	-		
3. Mean Wake Time	0.02	-0.14	-	
4. AC	-0.21*	-0.19+	0.22**	-

Note. **p<.01. *p<.05. +p<.10 All variables were calculated based on 5 consecutive school days. Var. = variability.

Discussion

Conclusions

Consistent with our hypotheses, AC was negatively correlated with the variability of sleep and positively correlated with average wake times. The consistency of children's sleep is modifiable and may be particularly important in understanding children's AC.

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Future Directions

Although interesting, more studies are needed to understand the relation between the timing of children's sleep and AC. As a preliminary examination, we analyzed the moderating relation of family income between average wake times and AC. Additionally, future studies are needed to identify if AC mediates the relationship between sleep schedules and fundamental social and academic outcomes.

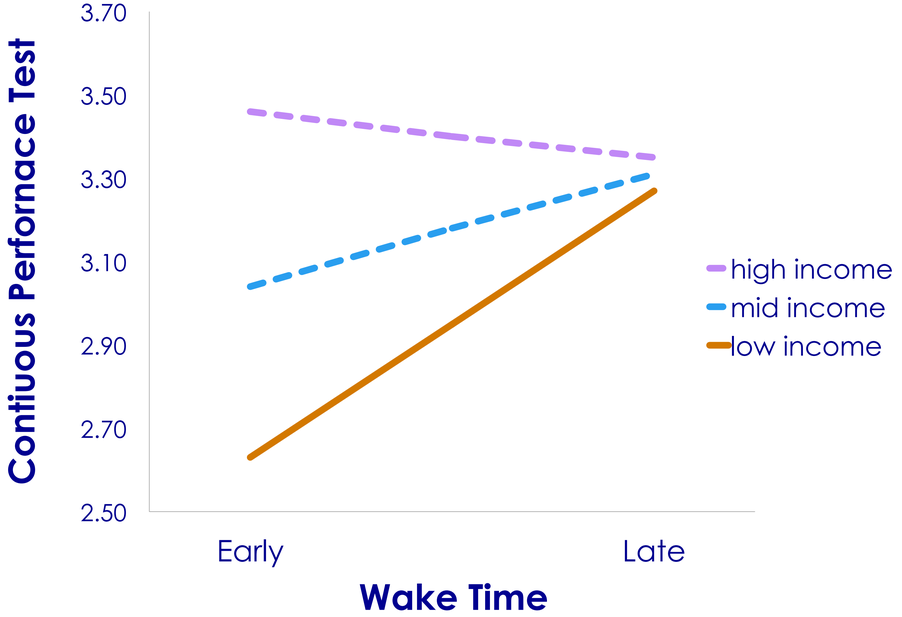


Figure 1. The interaction between average weekday wake times and family income. Solid lines represent significant ($p<.01$) simple slopes and dotted lines represent non-significant simple slopes (slopes: high=-0.12, mid=0.29, low=0.70).