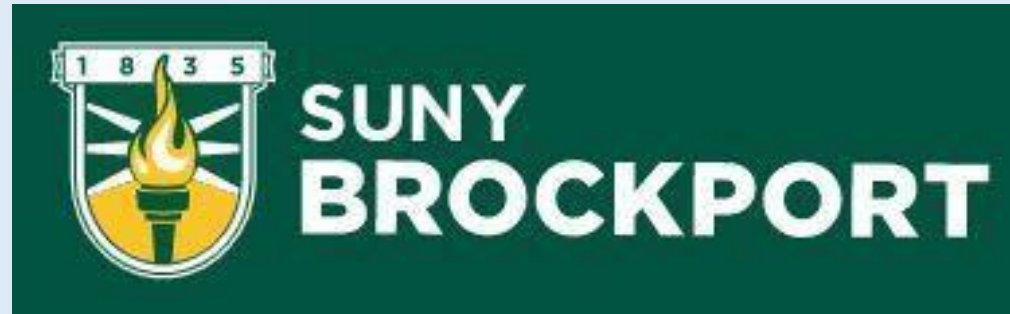


The School Start Time Conundrum: The Role of Sleep Health in Child Functioning

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State University of New York at Brockport



Bedford Central School District
October 1, 2024

Overview

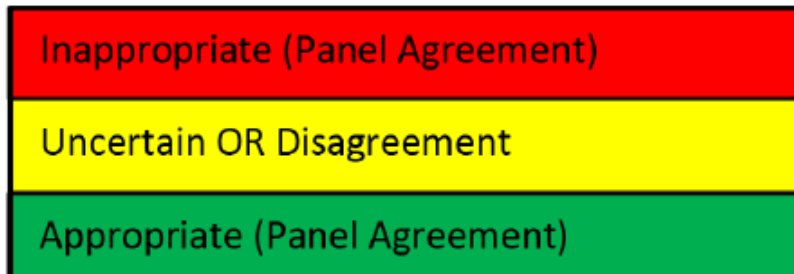
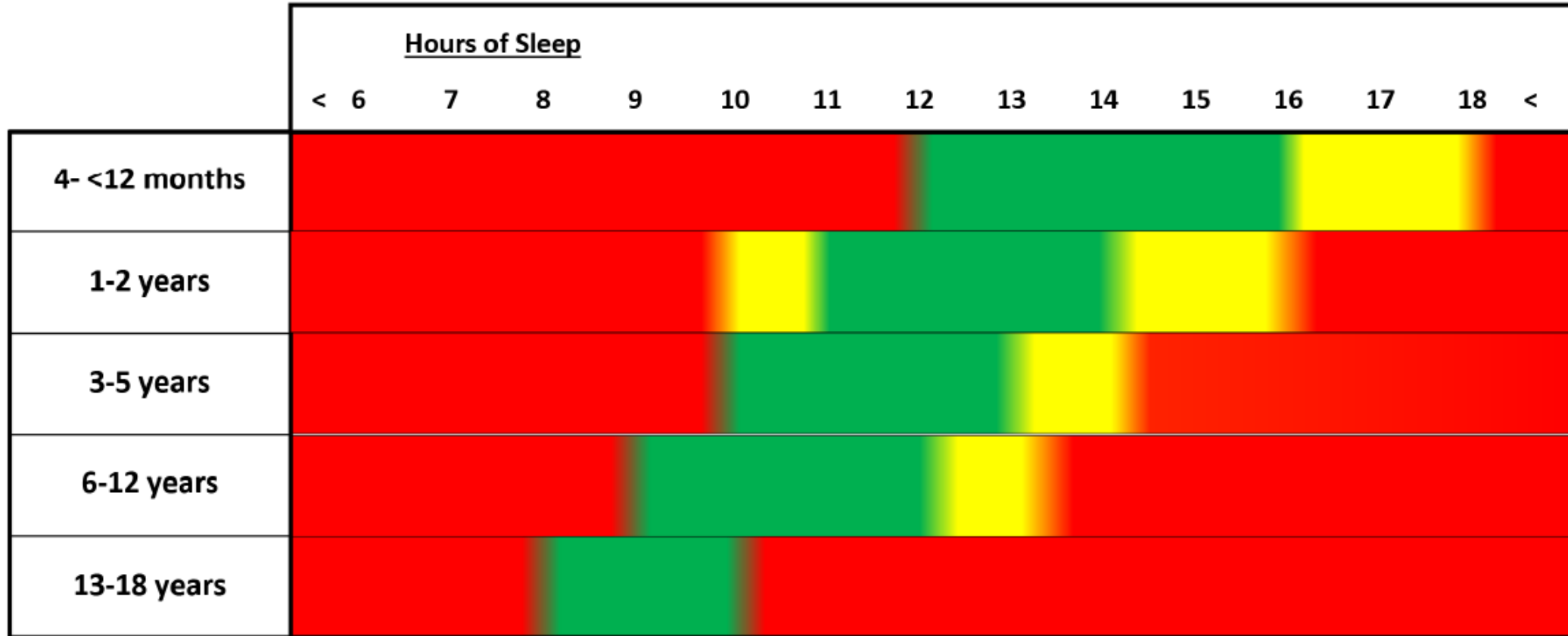
- Bad News First...
- Biopsychosocial Background on Sleep
 - 3 critical processes
- So where does this leave us?

A Local High School

First Day of School-Wednesday, September 6, 2023:

Start Time: First block begins at 7:25 a.m. Students may be dropped off at the main entrance starting at 6:45 a.m. Students using our buses typically enter the school building by 7:03. Students will be entering the building through the “Blue Arches” in the back of the building when dropped off by the buses. Breakfast will be in the West Cafeteria until 7:20 a.m.

Sleep Duration Recommendations



Teens need between
8 and 10 hours
of sleep a night,
but polls show most teens get much less



60%

of middle
schoolers



70%

of high
schoolers



report **inadequate sleep on school nights**

The Bad News

- Hyperactivity
- Inattention
- Poor concentration
- Poor impulse control
- Disruptive behavior problems
- Emotional lability
- Somatic complaints
- Poor school performance
- Depression
- Low energy
- Decreased motivation
- Accident prone
- Substance use
- Suicidality

SLEEP

=

HEALTH

**Fewer tardies,
absences**

**Fewer sports
injuries**

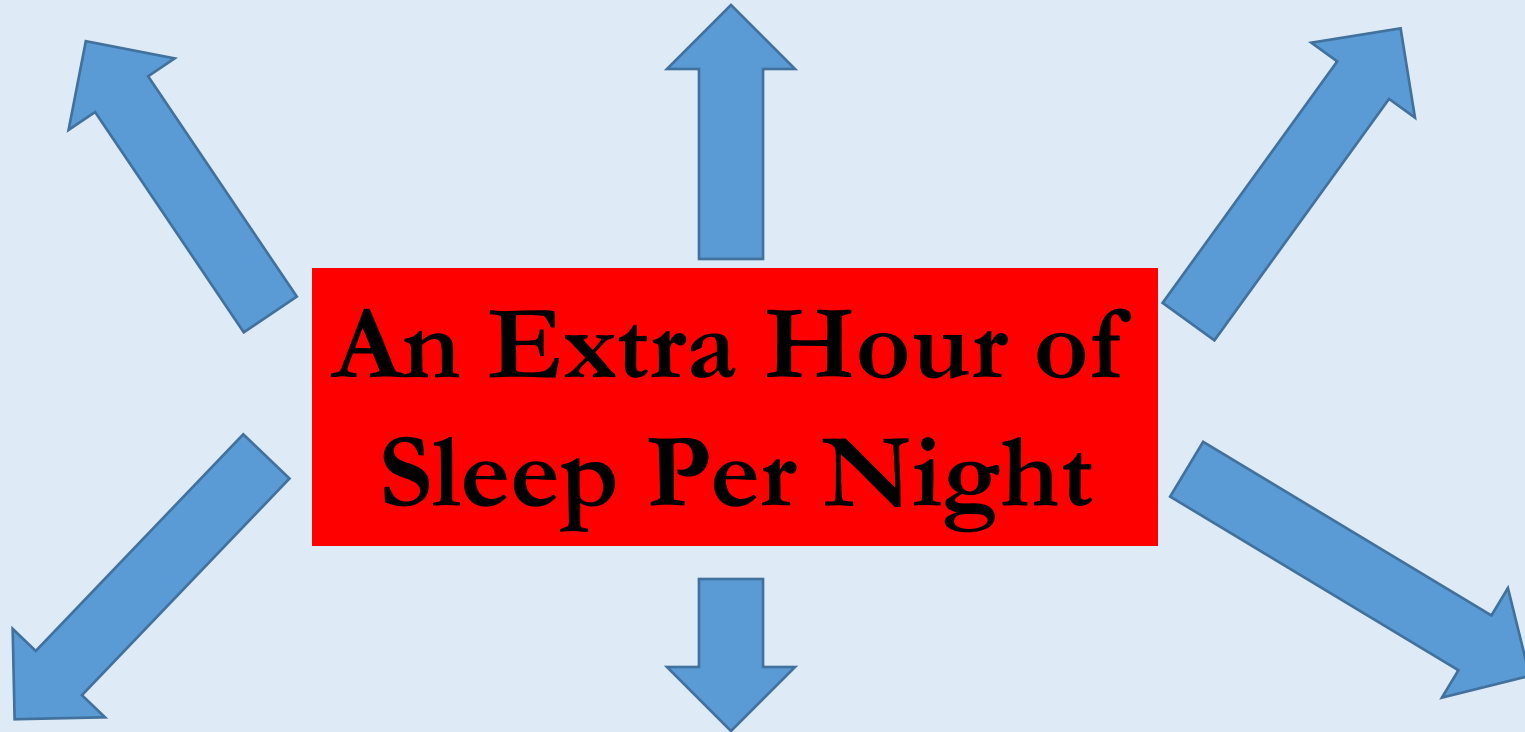
**Fewer car
crashes**

**An Extra Hour of
Sleep Per Night**

**Higher test
scores**

**Better mental
health**

**Better physical
health**

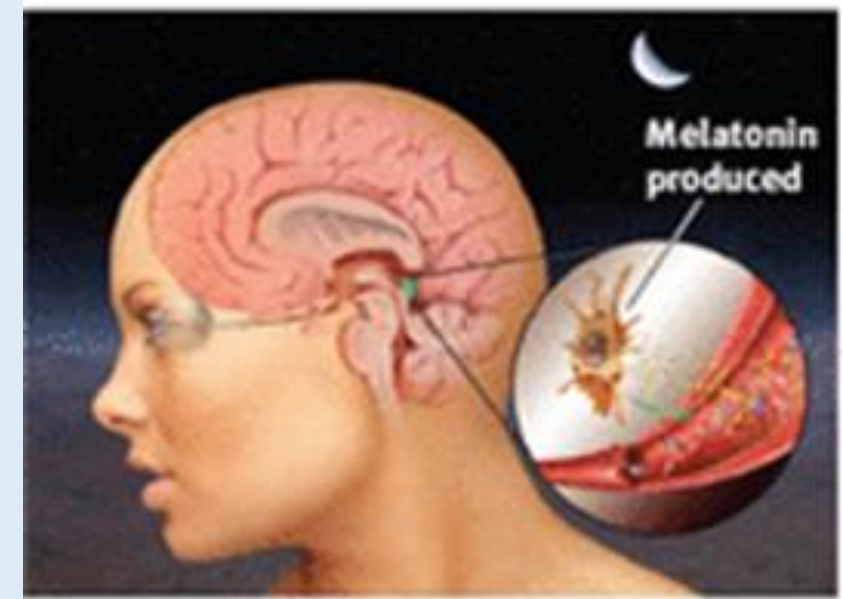
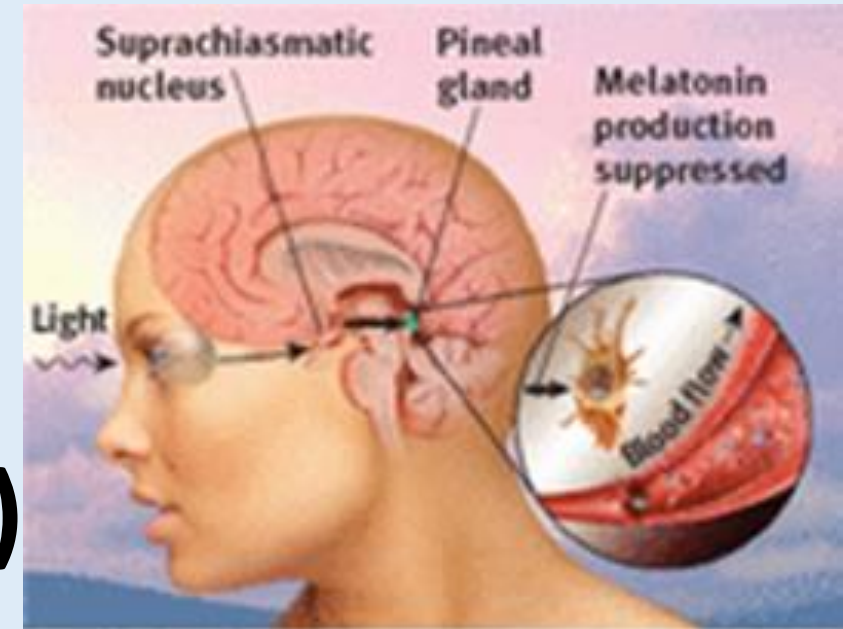


3 Processes

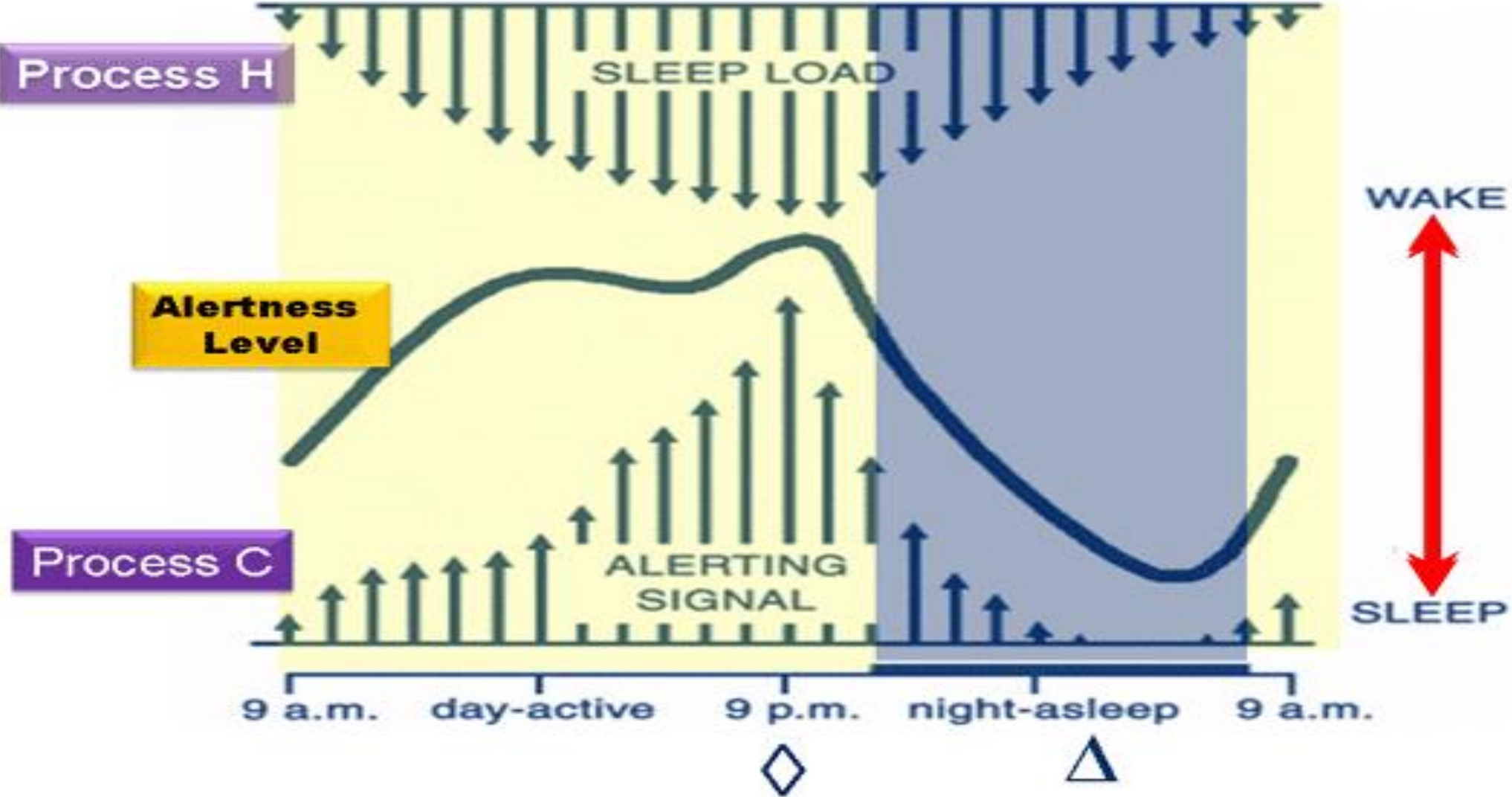
- The Neurobiological Process of Sleep
- The Glymphatic System
- Puberty's Impact on Sleep

#1: Sleep/ Wake Regulation

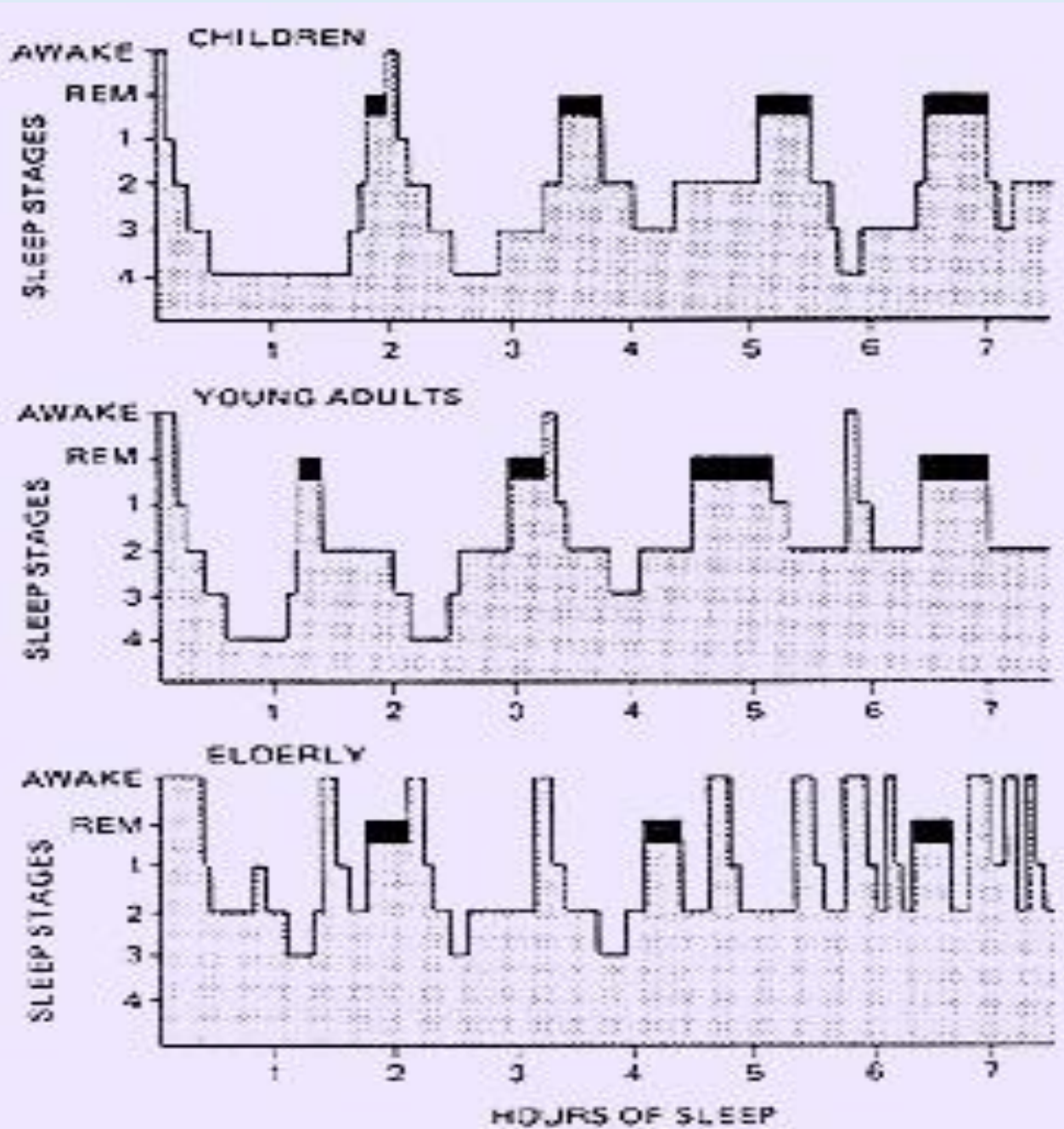
- **Sleep hormone → Melatonin**
- **Sleep producer (neurotransmitter)**
 - Adenosine



Sleep/Wake Regulation



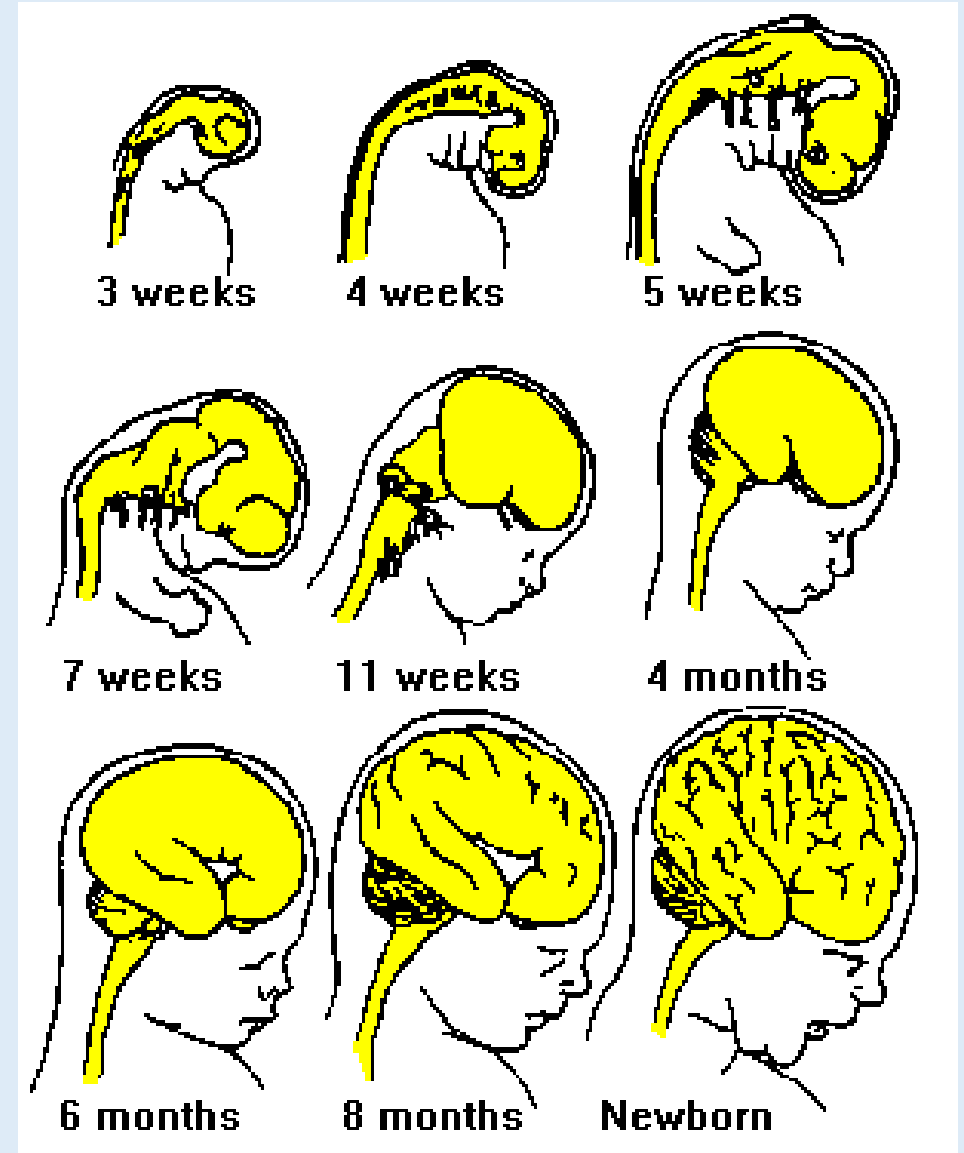
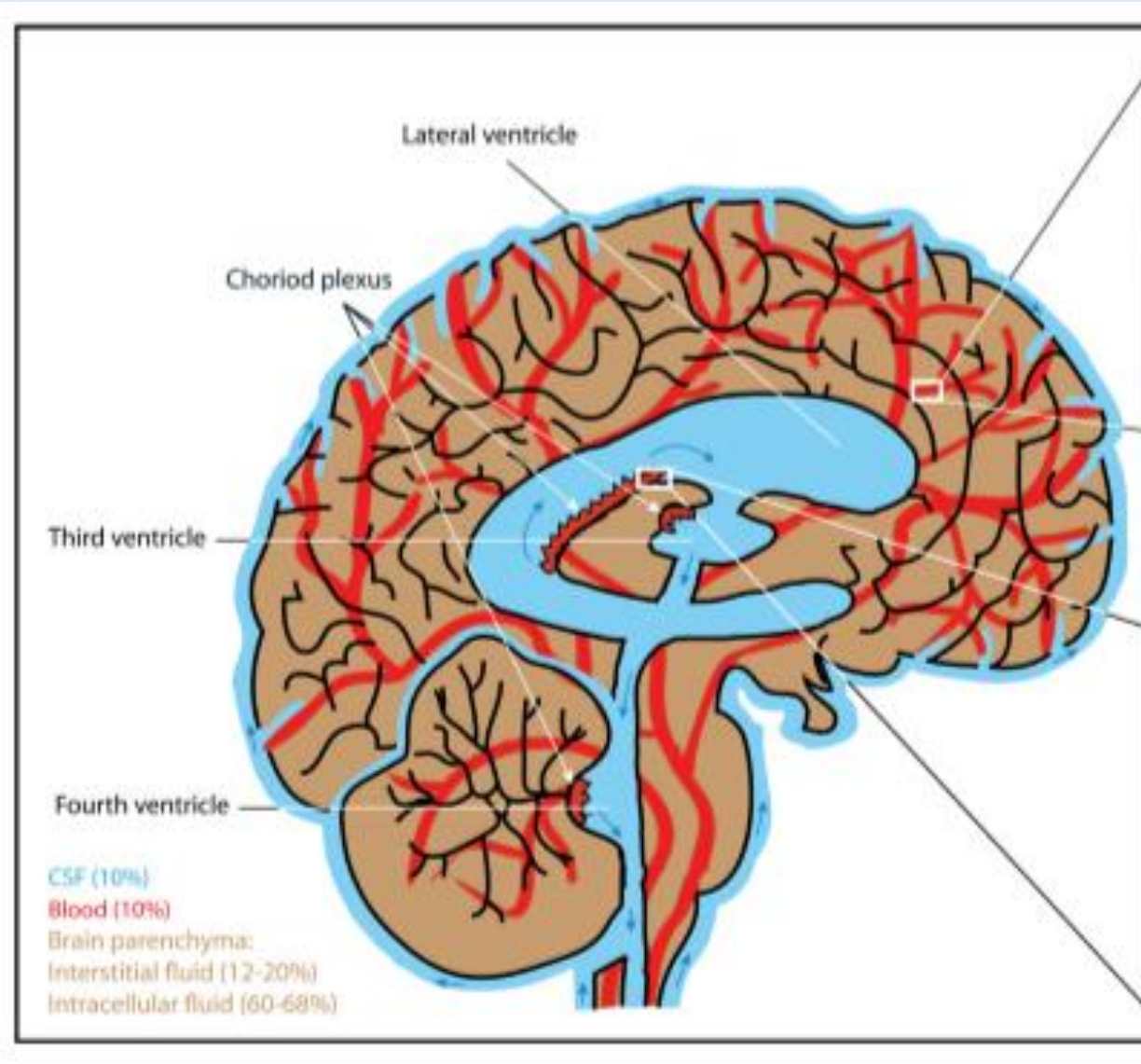
Sleep Stages



- Non-REM (NREM) sleep*
 - Stage 1 (N1)
 - Stage 2 (N2)
 - Stage 3 (N3, SWS)
- REM sleep
 - Rapid Eye Movement
- 90 min. cycles
- *Used to be 4 stages

#2: The Glymphatic System

- Where does the waste produced by the cells in the brain go?



#3: Puberty's Impact on Sleep

- **Delayed sleep onset**

- Circadian Rhythm Shift: ≈ 1.25 hour phase shift (delay) with puberty
- Environmental factors
 - H.W.
 - Socializing
 - Parents monitor less

- **Advanced wake times (sleep offset)**

- Earlier school start times
- Increased “prep time”

#3: Puberty's Impact on Sleep

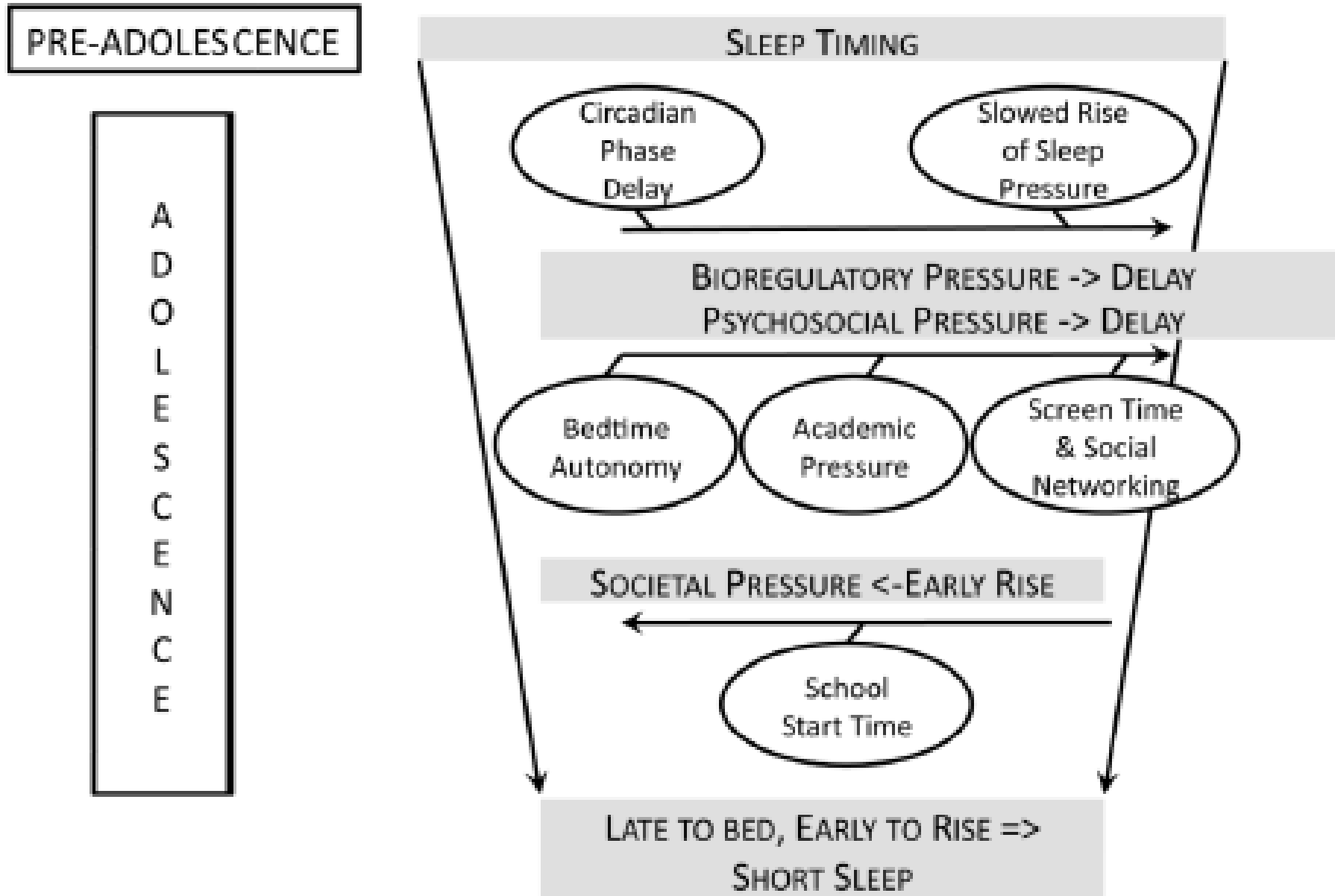
- **Decreased sleep/wake regularity:**
 - Discrepancy weekday/weekend sleep cycle
 - “Weekend oversleep”
- **Decreased daytime alertness**
 - ↑ Daytime sleep tendency at mid-puberty
 - ↓ Parental protection of sleep time

Scope of the Problem

- Average sleep high school student needs:
9 – 9 ¹/₄ hours/night
- Average sleep high school student gets:
7 ¹/₄ hours/night

“Twilight Zone”

Adolescent Development & Sleep: The Perfect Storm



The Bad News (Again)

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- Inattention
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- Poor impulse control
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- Accident prone
- Substance use
- Suicidality

**Fewer tardies,
absences**

**Fewer sports
injuries**

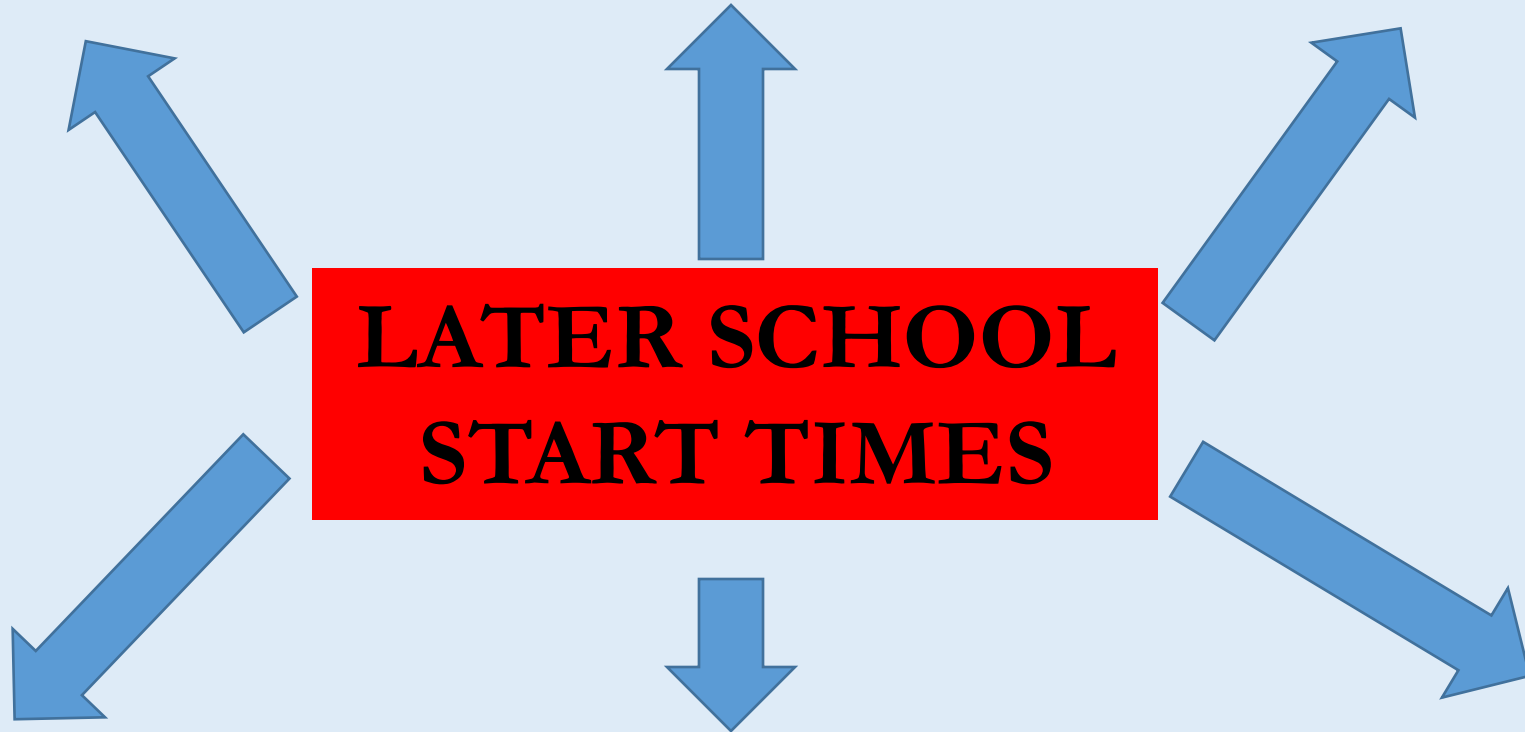
**Fewer car
crashes**

**LATER SCHOOL
START TIMES**

**Higher test
scores**

**Better mental
health**

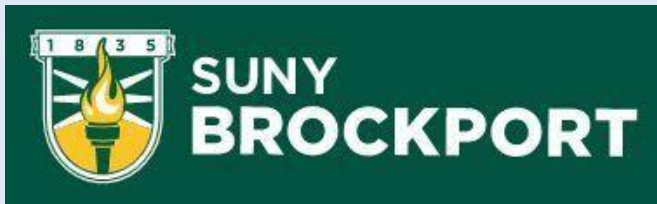
**Better physical
health**



Questions?

Jack Peltz, Ph.D

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Savage Chickens

by Doug Savage

