

BELL TIMES RESEARCH: WHAT WE DO AND DO NOT KNOW

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ORGANIZATION OF PRESENTATION

- Background information on Sleep Studies
 - Importance of sleep
 - National sleep study
 - Circadian rhythms
- Sleep and Student Performance
 - Overview of studies
 - Findings & Recommendations
 - Dr. Peter Hinrichs
- Implications for Changing Start Times
 - School Districts who changed
 - Other “costs”
- Sleep Debt Strategies

SLEEP STUDIES

- ◉ The Circadian Rhythm
 - When children reach adolescence, their sleep patterns change
 - difficult to fall asleep before 11 pm
 - 9 ¼ hours needed (8.5 for some)
- ◉ Lack of Sleep
 - Impacts cognitive ability, memory, creativity, ability to multitask
 - Manifests physically (acne, medical illness)
 - Increases impulsivity and irritability
 - Psychological impact (feelings of depression, anxiety, high-risk behavior)
- ◉ Sleep in America Poll (1996)
 - 1602 respondents (telephone interviews)
 - Grades 6-12 (ages 11-17)
 - Response rate 27%

IMPACT ON STUDENT PERFORMANCE

- ◉ Wahlstrom (2002) - Minneapolis
- ◉ Miller and colleagues (2004) - US Navy
- ◉ Fredriksen, Rhodes, Reddy, & Way (2004) - Chicago
- ◉ Wolfson and colleagues (2007)
- ◉ Edwards (2012) - Wake County, NC
- ◉ Dr. Peter Hinrichs (2009)

WAHLSTROM (2002)

- First longitudinal study of later high school start times
 - In 1997, Minneapolis Public School District shifted school start time from 7:15 to 8:40 am
- 6 years of data - 3 years prior to change and 3 years after the change
- Stratified random sample of 1200 students in grades 9-12 for survey twice a year
- A slight improvement in grades earned overall, but the differences were not statistically significant.

MILLER AND COLLEAGUES (2004)

- ◉ 6,165 first-year students from the entering classes of 2004 to 2008
- ◉ Academic aptitude is measured through SAT verbal and math scores
- ◉ Examined three different points with the sleep schedule
- ◉ Found that starting school day 50 mins later, positively effected student achievement.

FREDRIKSEN & COLLEAGUES (2004)

- Three-year (1995-1997) longitudinal assessment of 2,259 sixth graders at 23 Chicago middle schools
- Students who slept less exhibited lower initial self-esteem, lower initial grades, and higher initial levels of depressive symptoms
- Students who obtained less sleep over time reported heightened levels of depressive symptoms and decreased self-esteem.
- Changes in sleep over time did not affect grades

JOO ET AL (2005)

- ◉ 3,871 high school students in Seoul, South Korea aged 15-18 years
- ◉ September - December 2001
- ◉ 11 schools randomly selected out of 59 public & private high schools (only 10 school participated)
- ◉ Questionnaire used to assess sleep patterns and problems (wake time, bed time, etc.)
- ◉ Found that increased risk of excessive daytime sleepiness was related to several of their investigated factors, one of which was low student performance.

WOLFSON & COLLEAGUES (2007)

- ◉ 7th & 8th grade students (N=205) from two schools (one 7:15 am start and one 8:37 am start)
- ◉ Administered The Sleep Habits Questionnaire
- ◉ Examined official academic performance, attendance, and tardiness records
- ◉ No school differences found for students in grade 7, but students in grade 8 at late starting school had higher average grades

EDWARDS (2012)

- Middle school students in Wake County, NC
 - Data from 1999 to 2006
- End of grade tests in reading and math
- Findings suggest later start times positively impact student performance.
 - 1 hr later start time associated with increase in average test scores of more than two percentile points in reading and math
 - Start times have a greater effect on the bottom half of students

**DR. PETER
HINRICHS**

SCHOOL DISTRICTS

- ◉ Wake County, NC
- ◉ Arlington, VA
- ◉ Edina, MN
- ◉ Fayette, KY
- ◉ Wilton, CT

THE OTHER “COSTS”

- ◉ Child care
- ◉ Employment schedules
- ◉ Rush hour
- ◉ Extracurricular activities (sports, band, etc.)
- ◉ Student internships
- ◉ Impact on teachers
- ◉ Impact on other school levels (elementary and middle)

THE OTHER “COSTS” (CONT’D)

- ◉ The Impact of School Starting Time on Family Life (Wrobel, 1999)
 - The impact of changing school starting time is profound for many families
 - Transportation to and from school and other activities was a substantial, if not primary, concern in the less affluent school districts, where viable alternatives to school transportation were typically reported to be limited or nonexistent (p.362).
 - How the policy process plays out in a community has substantial impact on how the changes are received by families

THE OTHER “COSTS” (CONT’D)

- Student time constrains
 - “Since I like to do a lot of stuff after school, the later starting time conflicts with that. I get home late, and I want to do stuff after school. The school district thinks that you have just as much time because you can stay up later. But after 9 or 10 p.m. for me, it doesn’t feel right to do homework anymore. So that just really limits my time, and it limits what I can do because I get home so late” (p.363).
 - In schools where student involvement in the policy process was limited, it was commonly reported that students simply stayed up later as a result of the later start time (p.363).

THE OTHER “COSTS” (CONT’D)

- Teacher concerns
 - “When these start times were changed, many people, especially school administrators in our district, asked ‘What is going to happen with regard to the community and the theater and sports?’ And the answers we were given was, ‘The rest of the world will adjust to accommodate us.’ But no one has adjusted to accommodate us” (p.363).
 - “Nothing meshes as well as it should. The learning doesn’t mesh; the social skills that go on the rest of the day, they just don’t mesh; my family life doesn’t mesh; everything is off. So that affects my attitude and affects the kids’ attitudes and their abilities in school” (p.363).

THE OTHER “COSTS” (CONT’D)

◉ Guidelines for Family-Friendly Policies

- 1) Inform and involve all stakeholders
- 2) Allow ample time (a year of planning is not unreasonable)
- 3) Provide justifications for decisions based on research data (families and students will use information if it is made available to them)
- 4) Support families in the decision process
- 5) Involve the community
- 6) Don’t forget the school staff
- 7) Commit to providing follow-up regarding the change

STRATEGIES TO REDUCE SLEEP DEBT

- ◉ Regular bed time and wake time
 - Bedtime routine
 - Bedroom setting
- ◉ Adequate number of hours of sleep
- ◉ Exercise
- ◉ Limit late afternoon caffeine (after lunchtime)
- ◉ Limit “screen” time
- ◉ Reduce exposure to “sleep stealers”
- ◉ Make sleep a priority