APPENDIX - Slides from Dr. Judy Owens
Sleep in School-Aged Children

- Total sleep time: 10-12 hours
- Low level of daytime sleepiness
  - Racial/ethnic differences napping
- Circadian preference (chronotype): owl vs lark*
- Less parental awareness of sleep issues
- School, activities, electronic media, later bedtimes, earlier rise times, irregular sleep/wake schedules
- However, as opposed to adolescents, they are biologically, environmentally and socially more amenable to manipulation of bedtimes (ie, to move sleep onset earlier) if required

*But most school-aged (pre-pubertal) children have a “morningness preference”*
Elementary School Start Times: The “Flip”

- Impact of School Start Time Changes:
- HS students delayed from 7:30am to 8:15am
- Students in grades 3-5 advanced from a start time of 8:20am to 7:45am
- HS students got 35 minutes more sleep
- 3rd graders also got more sleep (+24 minutes) after the change
- Sleep duration changes in 4-5th graders negligible
- No differences in behavior measures post-change

<table>
<thead>
<tr>
<th>Grade</th>
<th>SST 1 BT/WT (SD HH:MM)</th>
<th>SST 2 BT/WT (SD HH:MM)</th>
<th>Sleep Duration Difference (Min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>8:37p/6:49a (10:11)</td>
<td>8:22p/6:57a (10:35)</td>
<td>+24*</td>
</tr>
<tr>
<td>4</td>
<td>8:52p/6:56a (10:03)</td>
<td>8:22p/6:22a (9:59)</td>
<td>-4</td>
</tr>
<tr>
<td>5</td>
<td>9:10p/6:59a (9:49)</td>
<td>8:43p/6:23a (9:40)</td>
<td>-9</td>
</tr>
<tr>
<td>10</td>
<td>(7:42)</td>
<td>(8:17)</td>
<td>+35**</td>
</tr>
</tbody>
</table>

*Largely accounted for by earlier bedtimes
**Completely accounted for by later rise times; 0 min difference bedtimes