

# *Occasional Paper No. 38*

## **On My Own Time:**



## **The Conflict Between Adolescent Sleep Needs and High School Start Times**

by Gail C. Downs, M.S.  
Center for Research and Evaluation

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a publication of the College of Education & Human Development at the University of Maine  
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# On My Own Time: The Conflict Between Adolescent Sleep Needs and High School Start Times

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## **Abstract**

This paper discusses the conflict between adolescent sleep needs and early morning high school start times. It includes a review of literature on adolescent sleep needs as well as the results of multiple studies of schools that changed their start time from 7:15 to 8:40 a.m. conducted by the Center for Applied Research and Educational Improvement (CAREI) at the University of Minnesota. The literature shows that adolescents need more sleep than prepubescent children and tend to stay up later at night and sleep later in the morning. Furthermore, the change in sleep habits is not just a matter of choice but results from biological changes in puberty. Consequently, adolescents in general function throughout the school week in a sleep-deprived state, averaging 4 hours less sleep time per school night than needed. The CAREI studies point out that the impact of a later school start on high school students and their families is strongly related to socioeconomic status, geography, and individual differences. In conclusion, the decision whether to change the time at which school begins must be a local decision, one that requires input from the whole community: teachers, students, families, and citizens at large.

## **Introduction**

How early in the morning should school classes begin for adolescents? Why can't teenagers just go to bed earlier so they will be alert during early morning classes? Will a later school start time impact student participation in extracurricular activities? How many students will miss classes in order to accommodate athletic event schedules? What about students' jobs? What about busing? What time will my children be home for dinner? These are just a few of the questions facing school administrators, teachers, students, parents, and community members when they are faced with choosing a school start time that will promote adolescent learning.

The purpose of this paper is to provide information on why schools are considering a later start time for adolescents and what the school communities that have made the transition to a later start time have experienced. Specifically, the paper reviews literature describing the results of adolescent sleep research and research findings resulting from a later school start time in Minnesota schools where the high school start time was changed from 7:15 a.m. to 8:40 a.m.

## **Adolescent Sleep Research**

“High school and college students are among the most sleep-deprived people in our population, 30% fall asleep in class at least once a week” (Maas, 1998, p. 8). How much sleep do adolescents need? Why does it matter what time teenagers get up as long as they go to bed early enough to allow for the required hours of sleep? What are the ramifications of insufficient sleep? The answers to these questions are influencing educators of adolescents to reconsider the traditional early morning start of high school classes.

Findings from a study by Carskadon et al., (1980) suggest that adolescent daytime sleep tendencies increase even when their sleep patterns do not change. Carskadon used the Multiple Sleep Latency Test (MSLT) in her adolescent sleep research to determine the degree of sleepi-

ness adolescents experienced at various times throughout the day. The test measures the speed of falling asleep in repeated 20-minute periods where falling asleep is encouraged by asking students to close their eyes and try to fall asleep. A person who stays awake the full 20 minutes is deemed to be fully alert at that time. Carskadon (1993) reported that one quarter of adolescents who had 8 hours of sleep the night before the MSLT was administered, fell asleep in 0 to 5 minutes, an indication of severe sleepiness. Another quarter fell asleep in 5 to 10 minutes, and a third quarter fell asleep in 10 to 15 minutes. In other words, only one quarter of the adolescents tested were fully alert throughout the day following 8 hours of sleep.

Lawton (1999) conducted a study of students who had transitioned from a junior high start time of 8:25 a.m. to a high school opening at 7:20 a.m. She found that between 9:30 a.m. and 2:30 p.m., 9<sup>th</sup> graders in junior high fell asleep in 11.4 minutes on average, while 10<sup>th</sup> graders fell asleep in 8.5 minutes. Even more surprising was that at 8:30 a.m., the 10<sup>th</sup> graders fell asleep in just 5.1 minutes on average, and a large number did so in just 3.4 minutes. The evidence was clear that these students were far from alert during early morning classes.

In his book, *Power Sleep*, Maas (1998) recounted, “Adolescents need approximately ten hours of sleep each night to be fully alert all day, yet they average only around six—nearly a four-hour deficit every night” (p. 136). Since teenagers actually need more sleep than prepubescent children or adults and are sleeping less than when they were pre-adolescents, it is no wonder that adolescents fall asleep in school. Sleepiness is the body’s response to insufficient sleep (Lawton, 1999; Maas, 1998; Wolfson & Carskadon, 1998).

These data suggest that in general, adolescents who do not sleep approximately 10 hours at night are not fully alert, but the data does not account for individual differences. Mercer, Merritt, and Cowell (1998) examined self-reported data from a convenience sample of 612 ninth

grade health education students at two high schools. The results showed 63% felt they did not get enough sleep on school nights (MS) while 37% felt their sleep was sufficient (SS). When the two groups were compared (MS and SS), it was found that those who felt they did not get enough sleep (MS) were only sleeping 12 minutes a night less than those who felt they got sufficient sleep. The MS group reported they needed 2 hours more sleep a night to be at their best compared to the SS group that reported needing 1 hour more. In addition, the MS group expressed a preference for later sleep onset, and reported a poorer quality of sleep, more school stress and feelings of depression than the SS group. We can infer from these findings that individual adolescents differ in the amount of sleep they need to be at their best and the time of night at which they become sleepy.

Adolescents tend to stay up later at night and sleep later in the morning. This change in sleep patterns is not simply a matter of choice but is a result of biological changes in puberty, specifically, the timing of melatonin secretion. Melatonin is a sleep-inducing hormone produced by the pineal gland (Black, 2000). When Carskadon (1999) evaluated sleep tendencies of adolescents with the MSLT, she found the circadian pressure to sleep “was greatest right before melatonin secretion was about to turn off, about an hour before ‘normal’ waking up time” (p. 351) while the pressure to stay awake was greatest about an hour before ‘normal’ bedtime. This data conflicts with the usual sleepiness function whereby the body’s sleepiness increases in relationship to how long the individual has been awake. For many adolescents, the time of day has a direct impact on their level of sleepiness as well.

Carskadon (1999) experimented to see if it was possible to change the circadian timing of adolescents by controlling their exposure to light. In this research project adolescents were paid to maintain a sleep schedule from 10 p.m. to 8 a.m. while wearing eyeshades to exclude light The

teens' melatonin secretion was measured before they began the study and again 10 or 11 nights into the study. She found that adolescents' melatonin secretion moved significantly toward a common time: Early secretors moved toward later secretion and late secretors moved toward an earlier secretion time. This study suggests that adolescents who want to change their circadian rhythms can do so, but would have to maintain a strict bedtime and rise-time light-controlled schedule to obtain the desired result.

“Sleep is not optional. Sleep is biologically obligatory” (Carskadon, 1999, p. 352). The educational consequences of insufficient sleep include: memory lapses, decreased capacity for divergent thinking, lack of concentration, and decreased critical thinking abilities (Carskadon, 1999; Maas, 1998). In a workshop on sleep needs, Dinges reported subjects get better at an assigned task each day if they have had 8 hours of sleep a night; with 6 hours of sleep the learning curve is gone, and with 4 hours of sleep the negative impact on learning is even more pronounced (Graham, 1999). Student-reported data suggests that “early to bed, early to rise” students earn higher grades than those with delayed sleep patterns but grades have not been corroborated with school records.

Sleep is also important for healthy adolescent biological functioning and mental health. Maas (1998) explained that “growth hormone secretion peaks during deep sleep so uninterrupted deep sleep is especially crucial for children and adolescents” (p. 33). Adolescents with poor sleep habits are more anxious and have higher levels of depression (Mercer, Merritt, & Cowell, 1998; Wolfson & Carskadon, 1998). In addition, the community at large suffers from adolescent sleep deprivation when adolescents are involved in automobile accidents as a result of falling asleep while driving. The problem is further exacerbated when alcohol is part of the scenario; the impact of alcohol is boosted when drinkers are sleep-deprived (Maas, 1998). Carskadon (1993)

cautioned that sleepiness while driving cannot be overcome by rolling down windows, turning up the radio, or learning better driving skills.

Given that the evidence clearly indicates the majority of adolescents would benefit from a later rise time, one might think delaying the starting time of high school classes would be automatic. In fact, some schools have made the transition. Studies of these schools present a complicated set of issues relating to a later start time.

### **Experiences of High Schools That Have Transitioned From a 7:15 to an 8:40 a.m. Start**

The seven high schools in the Minneapolis Public School System (MPS) changed their start time in school year 1997-1998. Since that time multiple studies have been conducted by the Center for Applied Research and Educational Improvement (CAREI) at the University of Minnesota in conjunction with MPS to measure the impact the later start time has had on stakeholders (i.e., students, teachers, families, and the community). The findings revealed that the change in school start time has been felt acutely at the personal level by stakeholders (Kubow, Wahlstrom, & Bemis, 1999).

#### *Impact on Students*

A report by Kubow, Wahlstrom, and Bemis (1999) provided evidence that the later starting time did not impact high school students in Minneapolis (an urban community) and in Edina (an affluent suburban community in MPS ) similarly. In focus groups, Minneapolis high school students expressed dissatisfaction with the impact of the later start time on after-school activities and students' personal schedules. Specifically, the students complained that they felt more tired at the end of the day and had less time to study. They also reported that practices were shorter and held at odd hours, sometimes in the early morning, thus defeating the purpose of a later school start time. In addition, conflicts in scheduling forced students to choose among

activities, restricting the number of extracurricular opportunities in which they could participate. The urban students felt the later dismissal time limited the number of hours they could work, the amount of money they could earn, and the types of jobs available to them. However, a number of students reported they were more efficient and alert, enabling them to complete more work during the school day and lightening their homework load. During focus group sessions in Minneapolis, teachers related that fewer students sought help before and after school and, through no fault of their own, frequently arrived late for the first class of the day. Instead of being transported on the first bus run of the day, high school students now came to school on a later run and the buses were frequently late.

In contrast, the majority of students in Edina focus groups reported feeling less tired at the end of the day. This group did not feel their involvement in after-school activities was negatively impacted. Nearly all the students in the focus groups reported they were more alert for the first hour of class and were generally retiring at the same time at night as when school started earlier in the day. They were, in fact, getting more sleep. Teacher observations supported the students' perceptions. Teachers in Minneapolis reported students were less involved in extracurricular activities while teachers in Edina did not notice an appreciable difference in participation rates. In Edina, teachers reported that many more students came to school early to get additional help with homework or prepare for quizzes. Teachers in Edina did not comment that students were arriving late for their first class. The differences between Minneapolis and Edina students are summarized in Table 1.

Table 1

*Differences in Impact of an 8:40 a.m. School Start Time on Minneapolis and Edina High School Students*

<b>Minneapolis (Urban Community)</b>	<b>Edina (Affluent Suburban Community)</b>
Negative impact on after-school activities	After-school activities not negatively impacted
Felt more tired at the end of the day	Felt less tired at the end of the day
Decreased participation in extracurricular activities	No appreciable change in extracurricular activity participation
Job interference: fewer hours, less pay, fewer options	No comment on jobs
Less apt to seek before and after-school help	More likely to seek before and after-school help
Increased tardiness	No comment on tardiness rate

Kubow, Wahlstrom, and Bemis (1999) questioned whether the difference between fewer Minneapolis students but many more Edina students seeking help before school could be a result of Edina students owning cars and driving themselves to school rather than having to rely on a school bus. It is noteworthy that jobs and earnings were not mentioned as a discussion topic in Edina focus groups. Could it be that these suburban students did not need to juggle jobs and after-school activities because they were not dependent on their own earnings in order to buy essentials? The differences between the two groups highlight the importance of including local stakeholders in any decision to change school start times.

Despite the differences in the two communities described in the above 1999 study, when Wahlstrom (2000) discussed MPS findings, she wrote, “Participation in all after-school activities has remained the same, and those students who go to after-school jobs did not shorten the number of hours they could work” (p. 41). It is unclear if this statement is a result of collecting empirical data that refutes the self-reported perceptions described by Kubow, Wahlstrom, and Bemis (1999), or are the result of more recent self-reported perceptions.

There were also similarities between the two groups in the Kubow, Wahlstrom, and Bemis (1999) report. When surveyed, teachers, overall, reported a greater number of students were more alert during the first two classes of the day than they were before the change. This

item evidenced the most agreement of any item on the survey (57%). Similarly, 51% of the teachers agreed they observed fewer students asleep at their desks. Teachers were nearly evenly divided, however, in response to generally improved student behavior: approximately one third agreed student behavior had improved, one third were neutral, and one third disagreed. Both staff and students registered concern about the need for students to be excused from the last class of the day (due to the later dismissal time) in order to participate in athletic events, other activities, and personal appointments. Fewer than 20% of high school students participate in athletics in any one season, yet teachers perceived early dismissal of even a few students to be problematic. Teachers complained that students missed class discussions, labs, and assignments. As a result, some students chose electives over required courses when the required courses were scheduled for the last period of the day (Kubow, Wahlstrom & Bemis, 1999; Wahlstrom, Wrobel & Kubow, 1998).

Wahlstrom, Wrobel, and Kubow (1998) reported they found no relationship between sports participation and self-reported letter grades when sports practices were held on weekends or after school; however, they did find a statistically significant negative correlation when the practices were held prior to the start of the school day. In other words, the more days per week students spent practicing before school, the lower their self-reported grades were. Interestingly, there was a significant positive relationship between the numbers of hours of practice and self-reported grades when the practices did not take place before school started. Self-reported grades associated with school start times showed a gradual increase for 11<sup>th</sup> and 12<sup>th</sup> grade students in schools that started between 7:30 and 8:00 a.m. and a rapid increase for students in these grades in schools that started between 8:00 and 8:30 a.m. “It is important to note that these findings do not indicate causality but there is clearly a statistical relationship between these two variables

[self-reported grades and school start time]” (School start time study: Final, Student survey section).

Administrators reported that school attendance rates for the first class of the day had improved. They also commented that students seemed calmer and fewer students were loitering in the halls early in the day (School start time study: Final).

Sleeping later fits the natural sleep patterns of teenagers in general; however, it should be remembered that there are adolescents who function best early in the morning. In addition, students with emotional or behavioral problems benefited more from an early start time as their behavior tended to deteriorate later in the day (Wrobel, 1999).

Table 2 is a compilation of the many ways all MPS high school students have been impacted by the later school start time, on average. These are general results for all high schools in the district, and include Edina students. The items are separated by positives and negatives and include some of the same items that appeared in Table 1.

Table 2  
*Impact of an 8:40 a.m. School Start Time on High School Students*

<b>Positives</b>	<b>Negatives</b>
More alert during first two classes	Students more tired at the end of the day
More efficient so bring home less homework	Practices and rehearsals at the end of the day shortened
Suburban students report being less tired at the end of the day	Urban students report reduced student participation in after-school activities
Getting more sleep	Less time for after school jobs
Suburban students more apt to get help before school begins	Students released early for athletic events and appointments so miss late afternoon classes
School health nurse reports fewer students sent home from school because of illness	Decreased enrollment in last afternoon class
Counselors report fewer “stress” referrals for students who feel a lot of academic pressure	May choose work over after-school activities if forced to make a choice because of late school dismissal
First period attendance is higher	Fewer urban students seeking academic help
More students take time to eat breakfast	If buses have a tiered schedule, students frequently arrive late for their first class
Fewer students fall asleep at their desks	Doing homework later

The CAREI research group compared data from the Bradley Hospital School Sleep Habits Survey (developed at Brown University) from three demographically similar districts: A, B, and C (i.e., similar socioeconomic status, racial and ethnic diversity, and school population size). District A had a later start time than Districts B and C. Self-reported results for high school students in grades 10-12 are presented below.

Although students in all three districts reported going to bed at the same time, students in District A slept later and averaged an hour more of sleep on school nights. Respondents could not be randomly assigned to schools with different start times so one should not conclude that the later start time “caused” any statistically significant differences. The self-reported data were analyzed using one-way ANOVAs to identify any statistically significant differences (School start time study: Technical).

This document is not intended to be a technical report; therefore,  $F$  and  $p$  values will not be provided where statistically significant differences are listed (all  $p$  values are at most  $< .05$ ). Readers interested in detailed information are encouraged to download the entire document from the Web site: [http://education.umn.edu/CAREI/Programs/start\\_time/Volumell.pdf](http://education.umn.edu/CAREI/Programs/start_time/Volumell.pdf).

Table 3 below lists all statistically significant differences between District A and the other two districts. An “X” in a District B or C column indicates a statistically significant difference was found between District A and that district.

Table 3

*Statistically Significant Differences Between District A and Districts B and C for Grade 10-12 Students*

<b>District A results showed ...</b>	<b>District B</b>	<b>District C</b>
Less daytime sleepiness	X	X
Much less overall sleepiness		X
Less sleepiness while studying		X
Less sleepiness while taking tests		X
Less sleepiness in class		X
Less sleepiness while working on a computer		X
Less likely to arrive late to class because of oversleeping	X	X
Less depressive feelings and behaviors		X
More hours of homework during the school week	X	
More hours of homework on the weekend	X	
Higher self-reported grades	X	X
Less weekend oversleep (time slept on weekend nights beyond time slept on school nights)	X	X
Fewer hours of work during school week	X	X
More hours of extracurricular activities during the school week	X	

When interpreting the data, the reader should note that grades were student self-reported, and students in District A worked significantly fewer hours than students in either District B or C. These factors cause one to question if higher grades are in fact a result of sleeping later in the morning or are heavily influenced by work schedules and self-perceptions. This is a question that merits future research. The reader should also be aware that students in District A were already sleeping an hour more than students in District B and C during the school week; hence, the lower weekend oversleep does not mean District A students did not sleep as long on the weekends as students in District B and C. It simply means the difference between the amount of sleep they got on school nights and weekends was less than the difference students in the other two districts experienced between school night sleep and weekend sleep.

*Impact on School Staff*

School staff benefited in a number of ways from the later start time (Kubow, Wahlstrom, & Bemis, 1999). Many teachers continued to arrive at school at the same time they did prior to the change and the later start time gave these teachers an extra hour before school in which to

prepare instruction. Especially important was time to search the Internet for up-to-date reports that have more relevance for students than outdated information. Faculty and department meetings scheduled before school when teachers were fresh rather than at the end of the day when their energy was waning was another benefit cited by staff. Furthermore, teachers found that guest speakers were more easily attainable for the first class of the day because of the later start time (School start time study: Final).

Less positively, teachers, like students, commented that students were frequently dismissed during the last class of the day for personal appointments or to participate in athletic events. Teachers complained that they were often unable to cover the entire curriculum because so many students were absent. In addition, teachers remarked that the school bus schedule had a negative impact on field trips and after-school activities.

In general, the later school start had a favorable impact on teachers' personal lives before school, but an adverse impact on their after-school schedules. Teachers spoke positively of improved health, time to exercise before going to work, feeling more rested at the start of the day, and having more personal family time in the morning. When listing negatives, teachers most often cited driving in heavier traffic both to and from school. They also remarked that because of late-day weariness and personal obligations, there was decreased teacher supervision at after-school activities, and coaches expressed dissatisfaction with not getting home from school until early evening.

Teachers were fairly evenly split between liking and not liking the 8:40 a.m. start time. However, when asked to choose the time at which they would like to begin school, only 3.5% wanted to return to 7:15 a.m.; 43.8% chose 8:00 a.m., the most popular time selected; and overall, 72.7% chose 8:00 a.m. or later.

Table 4 summarizes the impact of an 8:40 a.m. start time on high school staff. The table shows that the number of positives exceeds the number of negatives but cannot report the intensity of each effect.

Table 4  
*Impact of an 8:40 a.m. School Start Time on High School Staff*

<b>Positives</b>	<b>Negatives</b>
Better prepared	Drive to work in heavier traffic
Get most current information from the Internet before class starts	Less availability of school buses has negative impact on field trips & after-school activities
Improved early morning personal schedule	Coaches don't get home from school until early evening
More alert at early morning staff meetings than after-school staff meetings	Less teacher supervision of after-school activities
Improved health because they have time to exercise before school	
Nearly 75% want school to start at 8 a.m. or later	
Guest speakers more likely to come to a first class if the first class is later	

#### *Impact on Families and Communities*

This paper focuses on changing the school start time in high schools, but to avoid an increase in current school transportation costs in districts where bus schedules are tiered to serve schools opening at staggered times, changing the high school start time usually requires changing the start time for the district's other schools as well. These changes present a set of problems regarding childcare and work schedules for families with young children. Changes in school start time may have a positive impact on some families while presenting a whole set of problems for others. Despite recent sleep research that found adolescents' physiological needs favor a later rise time, stress related to readjusting family schedules often deters communities from considering school start time changes. With respect to schools that have changed their schedules, Wrobel (1999) wrote, "While some families reported little difficulty in adjusting to the new schedule, others were devastated by the stress of attempting to meet the new demands on their time" (p.

361). Problems from changes that wreak havoc with family lives can often be avoided with adequate planning and adjustment time.

Wrobel (1999) observed that the factors that caused stress for families in MPS were frequently dependent on economic status. Transportation to and from school and school activities were prime concerns in less affluent communities where alternative ways to school were not easily afforded. A missed bus usually equated to a missed day of school for children in families with limited resources. In poorer localities, the school bus schedule was a much more important issue when changing the school day than in areas where a missed bus simply meant using the family car to transport children to school. In addition, parents with limited resources reported they felt stressed when their current jobs didn't offer the level of flexibility necessary to meet a different schedule for their children. Because of a later high school dismissal time, parents could no longer rely on adolescents to care for younger siblings after school. They were sometimes forced to choose between changing jobs or leaving young children unsupervised. In contrast, affluent families generally reported they simply altered their work schedules to accommodate their children's new school schedules. The result was that families in more affluent communities reported their prime concern regarding school start time was whatever would be in the best interest of students, while less fortunate families were more concerned with transportation, child care, and job issues.

Parent comments described a number of ways families are impacted by the later school start time. Parents reported their children were "easier to live with." Eating dinner later in the evening was not always convenient but parents reported they liked having time in the morning to chat with their adolescent children (Wahlstrom, 2000). In addition, many parents were pleased to be able to attend a 7:30 a.m. meeting to conference with teachers rather than taking time off from

work in the afternoon to talk with teachers (School start time study: Final). Parents of children with special needs that required personal care assistance before school also found the later start time to be advantageous (Wrobel, 1999).

Cultural norms can inhibit open discussion about a later high school start time. Wrobel (1999), when discussing the impact of cultural patterns on community attitudes toward a later school start time, used as an example, “Persons who were raised in an agricultural setting where early waking schedules were the norm, saw early starting times for school as not only normal but preferred and valued” (p. 363). Advocates for a later start time would probably employ different persuasive techniques in a farming community than in an area comprised mainly of white-collar professionals.

Communities may be concerned that a later high school start will constrict the time school facilities are available for adult and youth programs. Many schools reserve the use of sports facilities directly after school for student practices, allowing the community at large to use these facilities when students have finished. A later start of the school day will result in a later time at which high school students finish practices, decreasing the time these facilities are open to other community organizations (School start time study: Final). See Table 5 for a summary of the ways the later school start time has affected families and communities.

Table 5  
*Impact of an 8:40 a.m. School Start Time on Families and Communities*

Positives	Negatives
Parents can conference with teachers before school or in the late afternoon/early evening	Community use of school facilities constricted
Improved behavior and attitudes of children	Late dinner
Time to chat with children in the morning	Older children unavailable to care for younger siblings returning from school
More time to administer to the personal care needs of exceptional children	

## **Attitudes Toward Change: Changing Attitudes**

It is not easy to implement a change in school start times. Such a change is always risky because positive outcomes cannot be guaranteed. Results will vary based on community demographics and the level of commitment and support of all stakeholders: students, teachers, parents, employers, and the community in general. At the request of several Minnesota superintendents, the Center for Applied Research and Educational Improvement (CAREI) at the University of Minnesota assessed attitudes of students, teachers, families, employers, and community members toward a later school start time. CAREI researchers discovered that the issue “provokes the same kind of emotional reaction from stakeholders as closing a school or changing a school’s attendance area” (Wahlstrom, 1999, p. 345).

In 1994, after Mary Carskadon presented her research findings on adolescents, school, and sleep to the Minnesota Medical Association, members of the organization mailed a letter to all school superintendents in the state urging them to start school later in the morning. Carskadon’s presentation had convinced members that adolescents would benefit from sleeping later in the day, but it appears that the letter did not convince education policy decision makers. The preliminary results of a school survey in 1995 indicated that none of the schools had made this change (Lawton, 1995). Schools in other states were also struggling with school start time changes. A few years later, Lawton (1999) described the struggle a Kentucky district experienced with the decision to change the school start time. She wrote:

The notion of changing the time that school starts in the morning so inflamed parents and community members in the Fayette County, Ky., public schools last year that in the space of three months the school board voted three separate times—reversing itself twice—before it made up its mind. (p. 6)

Responses to the CAREI attitudes assessment survey revealed that although school staff expressed some primary concerns about delaying the school start time, they were willing to discuss ways to implement a change. When writing about the politics of school starting times, Wahlstrom (1999) emphasized the importance of open discussions that included all stakeholders, and provided suggestions she felt would facilitate the process. Wahlstrom advised that advocates for a later start time support their arguments with hard data and present the information in a manner that would encourage rather than discourage debate. Furthermore, she recommended that the debate delineate what stakeholders hope to gain from an earlier start time and what they might lose, always with students' best interests as the primary focus. She cautioned that if decision makers wish to minimize resistance to changing the school schedule, they must allow adequate time for all to adjust personal and family schedules prior to implementation.

### **Making Decisions**

One high school teacher offered a seemingly simple solution that would accommodate a variety of students' schedules and preferences. When responding to a teacher questionnaire, the educator wrote: "At the high school, flexible starting time should be an option. Athletes need the early time. Students who work need the early start, morning people like the early start, but others benefit from the later start" (Kubow, Wahlstrom, & Bemis, 1999, p. 371). Perhaps some school districts could stagger high school start times, but for most this solution would more likely be a dream than an option. The question administrators must ask themselves is, "What is the best high school start time for my district?"

Wrobel (1999) compiled seven guidelines to help policymakers develop and implement changes in school start times. The guidelines emerged from an analysis of data collected in the

CAREI studies of the Minneapolis schools and are included here as a “pocket guide” for administrators.

1. Inform and involve all stakeholders.
2. Allow ample time [between informing stakeholders of the decision and implementing the new times].
3. Provide justifications for decisions based on research data.
4. Support families in the decision process.
5. Involve the community.
6. Don't forget school staff.
7. Commit to providing follow-up regarding the change (p. 364).

### **Conclusions**

Adequate sleep benefits adolescents' biological and mental health; improves their memory, concentration, and critical thinking abilities; and lowers the probability that they will experience a motor vehicle accident. Adolescents, in general, benefit from a later rise time because their natural sleep patterns governed by biological changes favor morning sleep. If the sole consideration when setting the high school start time is to increase adolescent sleep, then classes will start later in the morning. However, other factors must be considered.

The decision whether to change the school start time is a local decision. The contrasting data provided through focus groups and surveys in two communities, one urban and one affluent suburban, point out that a later high school start time does not benefit all communities equally. Cultural norms, transportation services, economics, and the impact of a later high school start time on other schools in the district must be balanced against the weight of adolescent sleep research findings. The variables underscore the importance of involving all stakeholders when

considering a change in the school day, listening carefully to their concerns, and if the decision is made to implement a change, allowing adequate time for teachers, students, families, and the community at large to adjust their schedules so that the change will maximize benefits and minimize consequences.

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