

Earlier School Start Times for Elementary School Students

When school start time advocacy collides with science

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The movement to have school districts move start times to later in the morning has been ongoing for years and has attained considerable momentum. School districts use multiple sources of information to guide their decisions, including feedback from their various constituencies (e.g. parents, teachers, students, coaches, transportation directors, administrators). They also rely on research that has been brought to bear on the topic, often soliciting the opinions of persons who have conducted the research. I have written several posts bearing on the matter with the first in September 2012: [Can-later-start-times-affect-school-achievement](#)

Here is another written in September 2013: [Later-school-start-time-benefit-supported-more-evidence](#)

And one in August 2015: [The-mismatch-between-teen-sleep-and-school-timing](#)

In all of those posts, I have voiced my support for moving times later for high school students in accordance with recommendations of the American Academy of Pediatrics and other professional organizations.

Individual school districts have been given guidance by one prominent advocacy organization, [Start School Later](#). This organization has become very well organized and influential in advocacy, and has been instrumental in helping school districts work through the challenges of changing school policies regarding start times. Start School Later has a National Advisory Board comprised of health care professionals, researchers, legal professionals and others, all of whom have impressive credentials.

In most school districts, elementary, middle, and high schools have different start times driven by the need to have the same busses make two sets of trips morning and afternoon each day. Although there are some exceptions, in most cases, the first runs have been for high schools, and over the years high school start times became earlier and earlier. When districts have considered moving high school start times later, one frequent solution is to “flip” the schedules and have elementary schools start earlier. In the cases with which I am most familiar, there has been some pushback from parents of elementary school students, with parents reluctant to have start times moved earlier.

The body of research studies supporting later starts for high school students is substantial and has been convincing enough to provide a strong empirical rationale that has fueled the advocacy movement. The studies have been an important element in convincing school boards to change. Professional organizations have lent their support to school start times that allow

adolescents the opportunity to get sufficient sleep, but there has been very little study of whether younger children, like adolescents, are affected by earlier start times. The possibilities are that (a) they are not affected at all; (b) that they are benefitted by earlier starts; and (c) they are adversely affected in some way.

In 2014, I wrote a post describing a study (Keller et al., 2015) showing that earlier start times for elementary students were associated with lower academic achievement scores. [How-do-earlier-school-times-affect-young-students](#)

The design of the study was correlational, and the authors were careful to point out that it could not be concluded that the earlier start times caused lower scores:

“ The current study is also limited by its cross-sectional design and data from only one state. Although we controlled for a number of potential confounding factors, including the racial composition of the schools and teacher–student ratio, we cannot infer that early school start times were the cause of school performance measures.” (Keller et al., 2015 p.243)

The paper was published online in 2014 and a year later in Fall, 2015, Dr. Keller and I were both contacted by individuals involved in discussions about changing start times in the Wayzata, Minnesota public school district. A parent of an elementary school student had come across the paper and was making the case that the data should be part of the discussion. Shortly afterward, we were contacted by a University of Minnesota Senior Research Fellow who was serving as a consultant to the Wayzata school district. This person implied that there might be deficiencies in the research design and statistical analyses and asked Dr. Keller for access to the raw data so that a statistical consultant could review it.

I did not follow the ensuing events, and did not even know what was ultimately decided by Wayzata. A few weeks ago, I came across the final report which is available online: [wayzata/starttimes](#). The report is 88 pages long including appendices and a good illustration of the time and energy school districts have been putting into making start time changes. The document includes feedback and opinions from parents, teachers, administrators (including athletics and transportation) and consultants, documentation of meetings held, preliminary studies, and recommendations. I was particularly interested in Appendix E, a memo written by a consultant. In the memo, the consultant reviews the Keller et al. (2015) study, and while offering faint praise for some aspects, the overall impression is that of discrediting its significance for the Wayzata debate. The consultant says, for instance, “In an otherwise well-crafted paper on school start-times, which demonstrates clearly the authors know their mathematics, the scientific work falls short.” and accuses the authors of trying to demonstrate that early start times caused the lower achievement scores for elementary students: “Correlations are presented as if implying causality. That is, the paper gives the impression that earlier school start-times cause poor student performance (due to an implied lack of sleep). In fact, nowhere is causality shown or proven.” The memo ends with the assertion “There are methods available to establish whether or not school start-times affect academic performance, whereas the research discussed here has not done so.” These comments were made in spite of the quote from Keller et al. (2015) paper above.

Contrary to the consultant's blithe comment that "...there are methods available...", determining cause and effect definitively in social science and education is extremely difficult, and in the case of school start times, pretty much impossible. For example, when the effects of new drugs are tested, the "gold standard" design is the double blind randomized control trial. The study is doubly blind because neither researchers nor the patients know whether they are receiving the drug or a placebo. Patients are assigned randomly to the experimental group receiving the drug or to the control group with the placebo. In the case of school start times, such a design is obviously not feasible. Whether a school was assigned to an earlier or later start would be patently obvious to all concerned, students, teachers, parents, and researchers. When studies are done to compare start times, they are necessarily correlational and cannot provide the most rigorous test of cause and effect.

While the full text of the Keller et al (2015) is not included in the Wayzata Report (a curious omission, given its comprehensiveness), Appendix H does contain the full text of a report based on a study of start times in Wayzata conducted by researchers at the University of Minnesota (Depuis, 2015). In that study, the author concludes that "...there is essentially no association between elementary school start time and middle school students' academic achievement." But goes on the caution, in a statement similar to that made in Keller et al (2015), that "...the data analyzed here were collected retrospectively and are observational in nature, which means that any observed differences between early and late start time elementary schools cannot be said to be caused by school start time." It is worthwhile to note that the DePuis (2015) study is published as an in-house report, not in a journal where it would be subjected to critical independent review. Independent blind critical review by multiple reviewers is a foundation of science and stands in sharp contrast to the situation in Wayzata where one consultant (who was likely paid to do so), made some unfortunate comments on the adequacy of research design and conclusions of a study that was published in a peer-reviewed journal.

The question of whether flipping the bus schedules such that elementary students begin earlier is a good idea is a complex one. A new study just published in *Sleep Health*, a peer-reviewed journal (Keller et al. 2017) indicates associations between earlier starts and higher rates of behavior problems in elementary schools. The editors of *Sleep Health* have just issued a call for papers on school start time, and I will be interested to see if any other studies have even looked at outcomes for elementary school students. It is clear is that there are passionate advocates for later start times for adolescents – I am one of them. But I believe that advocates are misguided when they assume certainty that elementary students are not affected by earlier start times, and until more research has been done, I hope that those advocates will exercise good judgment in the meantime.

References

Depuis, D.N. (2015). The association between elementary school start times and students' academic achievement in Wayzata Public Schools. Center for Applied Research and Educational Improvement, College of Education and Human development, University of Minnesota.

Keller, P. S., Smith, O. A., Gilbert, L. R., Bi, S., Haak, E. A., & Buckhalt, J. A. (2015). Earlier school start times as a risk factor for poor school performance: An examination of public elementary schools in the commonwealth of Kentucky. *Journal of Educational Psychology*, 107(1), 236-245.

Keller PS, Gilbert, L.R., Haak, E.A., Shuang, B., & Smith, O.A. (2017, in press). Earlier school start times are associated with higher rates of behavioral problems in elementary schools, *Sleep Health* (2017), <http://dx.doi.org/10.1016/j.sleh.2017.01.004>

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