

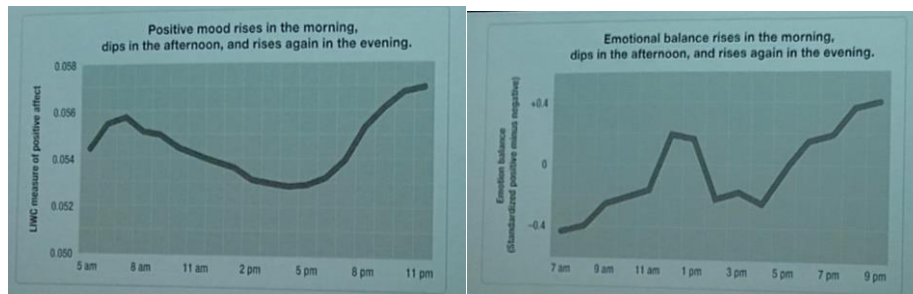


"We don't take the question of WHEN seriously enough."

## 1 The hidden pattern of the day profoundly affects student performance.

Pink cited research done on mood and time of day. Two specific studies cited, and noted that there are many more that follow the same pattern:

**Mood rises in the morning, dips in the afternoon, and rises again in the evening.**



Two specific studies/articles cited on his slides:

[Cognitive Fatigue Influences Students' Performances on Standardized Tests](#)

[How the Time of Day Affects Productivity Evidence from School Schedules](#)

"For every hour later in the day, scores decrease. . . . We find that an hour later in the day causes a deterioration in test score that is equivalent to slightly **lower household income, less parental education, and missing two weeks of school.**"

-Hans Henrik Sievertsen, Francesca Gino, and Marco Piovesan, "Cognitive fatigue influences students' performance on standardized tests." *Proceedings of the National Academy of Sciences* 113, no. 10 (2016): 2621-2624.

"Having math in the first two periods of the school day instead of the last two periods **increases the math GPA of students**" as well their scores on California's statewide tests.

-Helen O. Pepp, "How the Time of Day Affects Productivity: Evidence from School Schedules." *Review of Economics and Statistics* 98, no. 1 (2016): 1-11.

**Time-of-day effects can explain 20 percent of the variance in human performance on cognitive tasks.**

These trends related to mood play out similarly when we examine achievement data relevant to time of day the subjects took a test or other assessment.

**People do better analytic work in the morning. We do better creative work in the afternoon.**

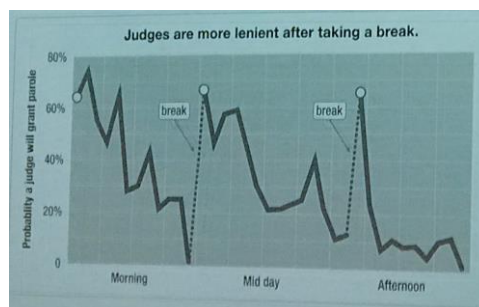
Serious educational implications for scheduling courses & testing.

MY THOUGHT:

What if we make sure to always schedule testing of our most vulnerable students (retakes, etc.) in the morning during peak time (around 9AM)? If 20% of human variance on cognitive tasks can be attributed to time-of-day effect, let's take advantage of knowing that around 9AM is the optimal time to do cognitive tasks. That's an easy thing to try.

## 2 We Underestimate the Power of Breaks

Pink cited several studies, specifically one on the relative leniency of judges before and after breaks. It found that judges were more likely to harshly right before a break and (consistently) be much more lenient/understanding right after a break. The conclusion: Breaks affect mood. And mood affects performance.



He went on to discuss the impact of breaks in studies on students. The news is consistent: Breaks are correlated with higher achievement.

**"A 20- to 30-minute break improves average test scores . . . Our results also show that low-performing students are those who suffer more from fatigue and benefit more from breaks. Thus, having breaks before testing is especially important in schools with students who are struggling."**

—Hans Henrik Sweertsen, Francesca Gino, and Marco Provesa, "Cognitive fatigue influences students' performance on standardized tests," *Proceedings of the National Academy of Sciences* 113, no. 10 (2016): 2621-2624

Don't think of breaks as deviations from learning. Think of them as *part* of learning.

	TAKING TEST IN THE AFTERNOON W/OUT BREAK	TAKING TEST AFTER A BREAK
PARENTAL INCOME	\$1000 LESS	\$1900 MORE
PARENTAL EDUCATION	1 MONTH LESS	1 MONTH MORE
DAYS IN SCHOOL	TWO FEWER WEEKS	ALMOST FOUR MORE WEEKS

This slide shows equivalents, from what we know about how income, attendance, and parental education impact achievement.

Schedule breaks the way you schedule everything else (for example, meetings).

Fight for recess, not as a nicety but as a necessity.

Give *teachers* breaks!

What makes a “break”?

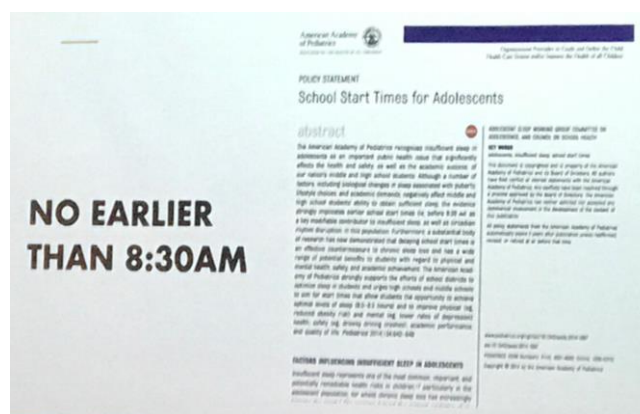
- something (even a minute or two) is better than nothing
- social is better than solo
- moving is better than stationary
- outside (or near nature somehow) is better than inside
- fully detached (no phones, etc.) is better than semi-detached

### 3 Beginnings (start time) Matter More Than We Realize

Pink started out by talking about the weekly CDC Mortality & Morbidity Report and how it noted a “disease” serious enough to have multiple negative effects on adolescents. It turns out that the “disease” was school starting too early.

The CDC Mortality & Morbidity Report he cited is available at this [LINK](#).

Pink went on to state that the American Academy of Pediatrics has also written about the serious dangers of early start times for adolescents. That [LINK](#) is here.



The AAP concludes that the best time to start is 9AM or after, certainly no earlier than 8:30.

Yet, Pink pointed out, very few school divisions are taking these warnings and research seriously. The average start time for secondary schools in the U.S. is 8:03 AM.

In schools that have moved to a post-9AM start time, the following effects have been noted:

- Better attendance and fewer tardies
- Fewer dropouts
- Higher math scores
- Better standardized test scores
- Fewer teen driving accidents/deaths

**The beneficial effects of moving start time to after 9AM are visibly greatest for those students at lower socio-economic status.**

Pink noted that moving start time later in the day has been noted by some school divisions as the most cost-effective strategy they have used to get these effects.

Pink's ending "takeaways" for this point were:

1. Stop the madness.
2. Seriously. Stop the madness.

Given the data and science we have, he says it makes no sense for schools to continue starting before 9AM for adolescents. **"This is not a close call," he said, in terms of the studies and data proving that starting later is better for education. "It's not even close."**

## 4 Synching Kids are Thinking Kids

Essentially: choral response, choral singing, and synchronized movements (like a class clapping together) have been proven to have positive physiological and psychological effects.

Students (or adults) who engage in synchronized activity – even for a short time – bond better, are more helpful to one another, and work better at collaborative efforts.

"Movement synchrony may be a **fundamental mechanism in social bonding**, serving to mitigate emotional tension among individuals and groups and bond them together within a collective identity."

-Tanghe, Baker, and Emma Cohen. "Movement synchrony forges social bonds across group divides." *Frontiers in Psychology* 7 (2016).

The takeaway here is that having students engage in some kind of synchronized movement (clapping, snapping, standing, sitting, whatever) or choral singing/chanting...can improve how those students interact with each other.

#### MY THOUGHT:

The Japanese have been onto this idea for a long time. When I lived there, you'd see all of the employees of a company – from the CEO to the janitor – outside doing synchronized exercises for 15-20 minutes before starting their workday together.

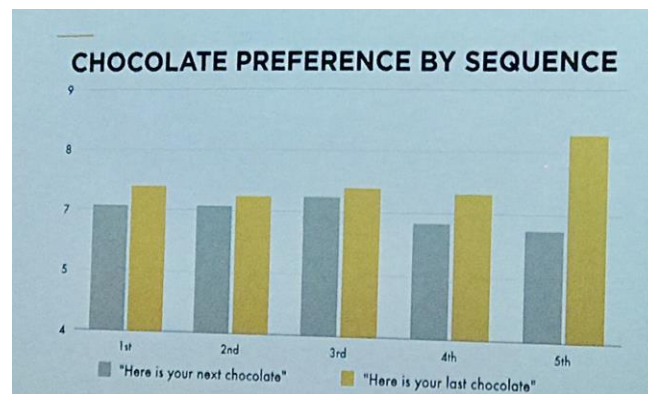
## 5 Endings Help Us Energize

As evidence of this phenomena, Pink asked us at what age we think most people run their first marathon. Then he revealed that there is a spike in 1<sup>st</sup> marathons – predictably and consistently – at 29, 39, and 49. With a marked decrease in 1<sup>st</sup> marathons at 30, 40, and 50.

In other words, people tend to get motivated toward the end of a decade/age. Pink says, “When we see the end, we kick a little harder.”

The next study he talked about was one where participants were given 5 chocolates. One group was told, “here’s your **next** chocolate” 5X. The other group, on the 5<sup>th</sup> one, was told, “here’s your last chocolate.” After each chocolate, the participants were asked to rate them on a scale.

The group told “here is your last chocolate” LOVED that last chocolate way more than the group who were just told “here’s your next chocolate” on the fifth one.



**Endings are mentally significant to us. Last things matter.**

**Human beings prefer endings that are elevated.**

**Always give the bad news first and follow it with the good news.**

**Use endings as meaning makers.**

True to his word, Pink ended on an up-note. But also a serious message: We don't take WHEN seriously enough. His new book is out in January. [When: The Scientific Secrets of Perfect Timing](#)