CENTRE FOR EDUCATION ECONOMICS

CfEE Research Digest
2018/19 (1)

Editor: Gabriel Heller-Sahlgren

CENTRE FOR EDUCATION ECONOMICS

Table of Contents

CENTRE FOR EDUCATION ECONOMICS

Editor's Pick

Rise and Shine: The Effect of School Start Times on Academic Performance from Childhood through Puberty

By: Jennifer A. Heissel and Samuel Norris

Journal of Human Resources (Autumn 2018)

Published version

Manuscript version (free)

Research suggests that sleep affects pupil learning, as it spurs memory formation and consolidation as well as improves attention and alertness. While pupils' sleeping patterns are affected by many factors that have little to do with education policy, they are likely to be directly related to one factor entirely determined by such policy: school start time. Since school start times are likely to affect pupils' sleeping patterns, it is potentially an important tool with which to affect their achievement. Indeed, randomised research suggests that later school start times increase the amount of sleep substantially. For this reason, some have suggested that adolescent pupils should not start school earlier than 11 am.

In this paper, Jennifer Heissel and Samuel Norris analyse the effects of school start times in Florida on pupil achievement, separating the impact among pre-pubescent children and adolescents, which may very well differ due to their different sleeping schedules. A key problem is that school start time is unlikely to be random to pupil achievement but may very well correlate with a range of observable and unobservable characteristics, which in turn affect achievement. To get around this problem, the authors use a clever and novel strategy that takes advantage of how light affects sleeping patterns biologically: less sunlight at night and more sunlight in the morning lead to earlier bedtimes, which in turn leads to more sleep. In this sense, it is school start time relative to sunrise, rather than clock start time per se, that should affect achievement. The authors exploit the fact that there is a sharp discontinuity in sunrise at American time-zone borders, which schools' clock start times do not adjust for entirely – thereby creating variation in school start time relative to sunrise. By analysing children in Florida who live close to and make relatively short moves across the central-eastern time zone border at some point between the ages of eight and fifteen, while adjusting for fixed pupil differences and school characteristics, they are able to obtain variation in school start time relative to sunrise that is uncorrelated with other factors that affect achievement.

The authors find that the impact of school start times is partly dependent on pupils' developmental level. While school start time has essentially no impact on

mathematics achievement among prepubescent pupils, it has a rather large effect among adolescents, which is detectable from the age of 11 among girls and 13 among boys – which happen to be pretty much exactly the median age of key pubertal transitions for each gender. The results suggests that one hour extra hour of sunlight before school improves math achievement by the equivalent of about 8 PISA points among adolescents. However, in reading, the effect is equivalent to about 6 PISA points for both adolescents and younger pupils. Meanwhile, the authors only find evidence that later school start times reduce absences among younger children, indicating that the mechanism among adolescents has less to do with learning time and more to do with improved alertness and ability to learn.

Certainly, one should note base public policy on just one paper, but other relatively strong research from different contexts – including North Carolina and South Korea at the school level and the US Air Force Academy at the university level – supports the paper's conclusions. There is also evidence that later school start times have other benefits. For example, research suggests that starting school later decreases late-night teen car accidents significantly, indicating that there are other welfare gains to consider.

Importantly, altering school start times appears to be a rather cheap policy in contrast to many other education interventions that generate similar effects. Since the impact differs for pupils of different ages, it is also possible to target school start times for different year groups in line with the physiological research. Doing so would be a relatively cheap way to improve pupil performance with no pedagogical interventions whatsoever. Overall, therefore, the policy conclusion appears to be a no-brainer: let the kids sleep so their performance can rise.

Effects of Policy and Practice – Developed World

Do Bonuses Affect Teacher Staffing and Student Achievement in High-Poverty Schools? Evidence from an Incentive for National Board Certified Teachers in Washington State

By: James Cowan and Dan Goldhaber

Economics of Education Review (August 2018)

Published version

Working paper version (free)

The authors study a teacher incentive policy in Washington State that awards a financial bonus to National Board certified teachers in high poverty schools. Using a regression discontinuity design, they find that the bonus policy increased the proportion of certified teachers in bonus-eligible schools by improving hiring, increasing certification rates of incumbent teachers, and reducing turnover. Depending on the method, they estimate that the proportion of NBCTs in treated schools increased by about four to eight percentage points over the first five years of eligibility. However, the improvement in certification rates corresponds to a change of about 0.2–0.3% of a standard deviation in teacher quality per year and they do not find evidence that the bonus resulted in detectible effects on student test achievement.

Fiscal and Education Spill-overs from Charter School Expansion

By: Matthew Ridley and Camille Terrier

CEP Discussion Paper No 1577 (September 2018)

Published version (free)

The fiscal and educational consequences of charter expansion for non-charter students are central issues in the debate over charter schools. Do charter schools drain resources and high-achieving peers from non-charter schools? This paper answers these questions using an empirical strategy that exploits a 2011 reform that lifted caps on charter schools for underperforming districts in Massachusetts. The authors use complementary synthetic control instrumental variables (IV-SC) and differences-in-differences instrumental variables (IV-DiD) estimators. The results suggest greater charter attendance increases per-pupil expenditures in traditional public schools and induces them to shift expenditure from support services to

instruction and salaries. At the same time, charter expansion has a small positive effect on non-charter students' achievement.

The Short-Term Effects of School Consolidation on Student Achievement: Evidence of Disruption?

By: Louise Beuchert, Maria Knoth Humlum, Helena Skyt Nielsen, and Nina Smith

Economics of Education Review (August 2018)

Published version

Working paper version (free)

The authors exploit variation stemming from school consolidations in Denmark from 2010 to 2011 to analyse the impact on student achievement as measured by test scores. For each student we observe enrolment and test scores prior to school consolidation and up to four years after. They find that the achievement of students in closing schools is adversely affected in the short run. Furthermore, students initially enrolled in small schools experience the most detrimental effects. The effects appear to weaken over time, suggesting that part of the effect is due to disruption.

Effects of Policy and Practice – Developing World

Combining Preschool Teacher Training with Parenting Education: A Cluster-randomised Controlled Trial

By: Berk Özler, Lia C. H. Fernald, Patricia Kariger, Christin McConnell, Michelle Neuman, and Eduardo Fraga

Journal of Development Economics (July 2018)

Published version

Working paper version (free)

The authors used a randomised, controlled study to evaluate a government program in Malawi, which aimed to support child development by improving quality in community-based, informal preschools through teacher training, financial incentives, and group-based parenting support. Children in the integrated intervention arm (teacher training and parenting) had significantly higher scores in assessments of language and socio-emotional development than children in preschools receiving teacher training alone at the 18-month follow-up. There were significant improvements in classroom organization and teacher behaviour at the preschools in the teacher-training only arm, but these did not translate into improved child outcomes at 18 months. The authors found no effects of any intervention on child assessments at the 36-month follow-up. The findings suggest that, in resource-poor settings with informal preschools, programs that integrate parenting support with preschools may be more (cost-) effective for improving child outcomes than programs focusing simply on improving classroom quality.

Inputs, Incentives, and Complementarities in Education: Experimental Evidence from Tanzania

By: Isaac Mbiti, Karthik Muralidharan, Mauricio Romero, Youdi Schipper, Constantine Manda, and Rakesh Rajani

NBER Working Paper No. 24876 (July 2018)

Published version

Manuscript version (free)

The idea that complementarities across policies can yield increasing returns from joint implementation has been posited in several economic settings. Yet there is limited, well-identified evidence of such complementarities in practice. The authors

present results from a randomised experiment across a representative sample of 350 schools in Tanzania that studied the impact of providing schools with (a) unconditional school grants, (b) bonus payments to teachers based on student performance, and (c) both of the above. At the end of two years, they find (a) no impact on student test scores from providing school grants, (b) some evidence of positive effects from offering performance-linked bonuses to teachers, and (c) significant positive effects on learning from providing both programs. Most importantly, the authors find strong evidence of complementarities between the two programs, with the effect of joint provision being significantly greater than the sum of the individual effects. The results suggest that accounting for complementarities between inputs and incentives could substantially improve the effectiveness of public spending on education.

General Education

Information Asymmetries between Parents and Educators in German Childcare Institutions

By: Georg F. Camehl, Pia S. Schober, and C. Katharina Spiess

Education Economics (Autumn 2018)

Published version

Working paper version (free)

Economic theory predicts market failure in the market for early childhood education and care (ECEC) due to information asymmetries. The authors empirically investigate information asymmetries between parents and ECEC professionals in Germany, making use of a unique extension of the Socio-Economic Panel Study (SOEP). They compare quality perceptions by parents and by professionals across 734 institutions. They detect considerable information asymmetries that differ across quality measures but less so by parental socio-economic background or centre characteristics. Both similarly contribute to explaining variations in the information gap. The authors conclude that information is not readily available to parents; an issue that should be addressed by policy-makers.

Genes, Education, and Labour Market Outcomes: Evidence from the Health and Retirement Study

By: Nicholas W. Papageorge and Kevin Thom

NBER Working Paper No. 25114 (September 2018)

Published version

Earlier version (free)

Recent advances have led to the discovery of specific genetic variants that predict educational attainment. The authors study how these variants, summarized as a linear index — known as a polygenic score — are associated with human capital accumulation and labour market outcomes in the Health and Retirement Study (HRS). They present two main sets of results. First, they find evidence that the genetic factors measured by this score interact strongly with childhood socioeconomic status in determining educational outcomes. In particular, while the polygenic score predicts higher rates of college graduation on average, this relationship is substantially stronger for individuals who grew up in households with

higher socioeconomic status relative to those who grew up in poorer households. Second, the polygenic score predicts labour earnings even after adjusting for completed education, with larger returns in more recent decades. These patterns suggest that the genetic traits that promote education might allow workers to better accommodate ongoing skill biased technological change. Consistent with this interpretation, the authors find a positive association between the polygenic score and non-routine analytic tasks that have benefited from the introduction of new technologies. Nonetheless, the college premium remains the dominant determinant of earnings differences at all levels of the polygenic score. Given the role of childhood SES in predicting college attainment, this raises concerns about wasted potential arising from limited household resources.