Towering intellects? Sizing up the relationship between height and academic success.

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Do tall students do better in school? Existing evidence demonstrates older students do better than their younger classmates and taller adults earn more money, but we know little about the potential academic "height premium" and/or a "short penalty." Height may affect outcomes through two broad channels. First, height may reflect underlying individual characteristics, such as childhood (dis)advantage or epi-genetic factors which shape academic performance directly (through cognitive ability, say) or indirectly (through health). Second, height may affect social interactions or opportunities. For example, shorter students may be disproportionately bullied or, conversely, taller students included in sports. These suggest height *relative* to classmates may be particularly salient and a key driver of the well documented positive effects of relative age and the benefits of redshirting. There is, unfortunately, a dearth of research in this area, due, in part, to the scarcity of data linking student academic outcomes and height. In this paper, we use unique student-level longitudinal data from New York City (NYC) to estimate the height premium in academic performance in grades 3 through 8, exploring the sensitivity of results to alternative specifications including school and/or student fixed effects and examining the role of race, gender and relative age.

In a parsimonious model, we find a statistically and substantively significant height gradient in math and ELA – up to .048 sd. increase in achievement for each sd. increase in height. We estimate a positive height gradient for boys and girls and among students of all races. Differences at the extremes important – the tallest students perform as much as .2 sd. better than the shortest. Height has no effect on absenteeism, suggesting results are not due to contemporaneous health problems, while controlling for obesity (BMI) increases estimated effects, suggesting physical attractiveness may be relevant. Student fixed effects models yield substantially smaller estimates – particularly among girls, providing support for the hypothesis that both height and cognitive ability are shaped by gene-environment interactions in the early years (Case and Paxson, 2008; Schick and Steckel, 2015). Still, after controlling for underlying, time-invariant differences the tallest boys (girls) score up to .11 (.073) sd. better than the shortest. Preliminary analyses indicate an independent effect of height *relative* to classmates conditional on absolute height. Finally, we show that quarter of birth effects (and relative age effects) are attenuated by controlling for height – as much as one quarter of the effect of quarter-

of-birth may be due to unobserved height. Results are robust to alternative samples and specifications, including using alternative measures of height.