

## Highlighting New Poverty Research

by Mark Long, Dylan Conger and Patricia Iatarola

Mark C. Long, Dylan Conger and Patrice Iatarola. "Effects of High School Course-Taking on Secondary and Postsecondary Success." *Am Educ Res J* 49 (2012): 285. Doi: 10.3102/0002831211431852

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## Effects of High School Course-Taking on Secondary and Postsecondary Success

**Background.** Postsecondary education is often promoted as a path to economic stability. However, not all high school educations provide the same level of preparation for postsecondary education, and many students who graduate from high school lack the skills needed to succeed in college. Recently, there have been wide-scale efforts at both the state and federal levels to increase the rigor of high school courses and bring high school curricula more in line with those at the college level. Although much of this policy effort is focused on encouraging poor or disadvantaged students to take rigorous courses, most of the existing research fails to distinguish the outcomes for these students from their more advantaged peers.

**Methods.** WCPC Affiliate Mark Long and colleagues Dylan Conger and Patrice Iatarola extend previous analyses on the impact of taking a rigorous course on educational achievement and labor outcomes by using a more expansive dataset including English, foreign language and social studies courses; accounting for variation across high schools and students with different characteristics; and using a matching technique in order to create a more reliable counterfactual group. The authors use panel data from a census of public school students in the state of Florida, focusing on the cohort of students who were enrolled in the 8th grade in 1998-1999. Because enrollment in rigorous courses is likely to be correlated with other traits that impact standardized test scores and college attendance, such as student preparation and ambition, it is difficult to isolate the effects of taking rigorous courses. In order to account for this, the authors make use of propensity score matching, a two-step process where the probability of taking rigorous courses is estimated as a function of observable individual characteristics (propensity score), and then individuals who took those courses are matched and compared with individuals with a similar propensity score who did not take rigorous courses.

**Findings.** Raw differences in outcomes show a large positive effect of taking a rigorous course in 9th or 10th grade on test scores, high school graduation rates, and the probability of attending a four-year college. After accounting for differences due to selection and in preparation for the courses, the results using the propensity score matching process are smaller. Taking one rigorous course seems to raise 10th grade math test scores by about one-quarter of a standard deviation. The estimated effect on reading test scores is smaller, from about .04 to .09 standard deviations. The results vary with the number of rigorous courses taken, but math courses seem to have the largest effects. If a student takes a rigorous math course, the likelihood of high school graduation rises by 9.5 percentage points. Taking rigorous courses in addition to math is associated with increases in the likelihood of graduation, but with diminishing returns, and is statistically insignificant if the student takes rigorous courses in all four other subjects. This pattern of a large effect of taking one rigorous and diminishing returns for additional rigorous courses is seen in the results for college attendance as well, but is even more pronounced. Taking a rigorous math course, in conjunction with at least one other rigorous course, appears to increase the likelihood of attending a four-year college by 10 to 15 percentage points and decreases the likelihood of attending a two-year college. Additionally, the authors examine whether these same outcomes hold for different subgroups of students, particularly "disadvantaged" (subgroups with lower rates of taking rigorous courses and lower levels of educational attainment) and "poor" (students who received free or reduced-price lunch at any time between 8th and 12th grade) students. They find that the effect of taking a rigorous math course on the likelihood of earning a high school diploma is 6.4 percentage points higher for poor students than for non-poor students. For the most part, however, there seem to be no significant differences in outcomes for Blacks and Hispanics relative to Whites or males relative to females. The authors argue that their approach removes much of the omitted variable bias, but that the results may be upwardly biased from unobserved student ambition or motivation. Even if some bias remains, the authors suggest that these results provide evidence about the value of promoting rigorous courses that policymakers can cautiously utilize in the absence of rigorous experimental findings.

# Poverty Research Flash

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Poverty Research Flash 2012-04

## **Effects of Course-Taking on Secondary and Postsecondary Success**

New research from Mark Long, Dylan Conger and Patrice Iatarola

### **Key Findings**

- Stimulating enrollment in rigorous courses in high school has received increasing attention from policymakers and, until now, there has been little research on the outcomes of this policy on various subgroups of students.
- Taken at face value, the results suggest that rigorous course-taking early on in high school increases college attendance and graduation.
- Large impacts are seen for taking a rigorous math course alone, suggesting that encouraging students to enroll in even one rigorous course can greatly increase the likelihood of high school graduation.
- Most of the relationships between course taking and educational outcomes are the same across demographic groups, except that the positive impacts are greater for poor versus non-poor students.