Peer Group Assignment and Student Achievement in the United States

Researchers:

Scott Carrell

Bruce Sacerdote

James E. West

Sector(s): Education

Location: United States Air Force Academy, Colorado Springs, CO, United States of America

Sample: 2,705 students

Target group: Higher education and universities Students Urban population

Outcome of interest: Student learning

Intervention type: Social networks

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Research Papers: From Natural Variation to Optimal Policy? The Importance of Endogenous Peer Gro...

Partner organization(s): United States Air Force Academy

The composition of peer groups is thought to impact productivity and academic achievement. Researchers evaluated the impact of creating peer groups optimized to improve the academic achievement of lower-ability first-year students at the United States Air Force Academy. Placing lower-ability students in the optimized groups, which mixed them with a relatively large number of peers with high scores on the verbal portion of the SAT, caused the lower-ability students to perform worse, and actually led them to interact more with other lower-ability students.

Policy issue

Peer groups are thought to influence how people work, learn, and behave. Researchers have therefore suggested that individuals could be sorted into peer groups to maximize their achievement and productivity. This study is believed to be the first attempt to predict peer groupings that would improve academic performance, sort students into those groupings, and test the outcomes.

Context of the evaluation

The United States Air Force Academy assigns first-year students into squadrons of approximately thirty students. Students all take the same required courses during their first-year, take common exams to measure achievement, and have no choice as to their professors. From 2000 until the beginning of the study in 2007, the Academy randomly allocated its first-year students into squadrons by certain demographic characteristics to create random, demographically-balanced peer groups.



U.S. Air Force cadets assembly

Photo credit: U.S. Air Force Public Affairs

Details of the intervention

Researchers conducted a randomized evaluation to test the impact of designing student peer groups to optimize the performance of the lower-ability students. The researchers randomly assigned students in the first-year classes of 2007 and 2008 to either a comparison group, in which squadrons were created following the Academy's prior random allocation method, or a treatment group, in which squadron composition was engineered in an attempt to improve the academic performance of lower-ability students.

Researchers predicted the grade point averages (GPAs) of each incoming first-year student based on the GPAs of first-year students from 2001-2006, with similar high school performance, standardized test scores, and other factors. The first-year students in 2007 and 2008 were then categorized into higher-ability, middle-ability, and lower-ability categories (of approximately equal size) based on predicted GPA.

Researchers then analyzed the squadron composition and academic performance of first-year students from 2001-2006 and, based on these data, generated a formula designed to allocate treatment group students into squadrons predicted to maximize the performance of the lower-ability students. The application of this formula resulted in the creation of two types of squadrons: one type composed largely of lower-ability students and peers with high SAT Verbal scores, and the other composed largely of middle-ability students without high SAT Verbal scores.

Researchers used administrative data from the Academy to group the students and track their academic performance. Researchers also surveyed students in the spring of their sophomore and junior years about their study partners and friends.

Results and policy lessons

Lower-ability students placed in the optimized squadrons containing peers with high SAT Verbal scores actually performed worse than their counterparts placed in squadrons created randomly. Treatment students affiliated significantly more with other lower-ability students, rather than with the peers theorized to improve their performance.

Lower-ability students in the treatment group had a GPA that was 0.061 points less, on average, than their counterparts in the comparison group. Despite having more higher-ability students and students with high SAT Verbal scores to choose from as study partners and friends, the lower-ability students in the treatment group did not have significantly more affiliations with either of these types of students, and in fact, were 9.5 percentage points less likely to have higher-ability friends than their counterparts in the comparison group. The lower-ability students in the treatment group were 17.1 percentage points more likely to have lower-ability study partners and 20.1 percentage points more likely to have lower-ability friends than their counterparts in the comparison group. This disparity is attributed partially to the relatively higher number of lower-ability peers in the treatment group squadrons (due to the removal of many middle-ability peers from these groups) and partially to a stronger tendency to affiliate with other lower-ability students (greater than would be suggested by different group compositions).

Middle-ability students in the treatment group had GPAs that were 0.082 points higher than middle-ability students in the comparison group, which may be attributed to their relative isolation from their lower-ability peers. The performance of the higher-ability students was not significantly affected.

Carrell, Scott E., Bruce I. Sacerdote, and James E. West. 2013. "From Natural Variation to Optimal Policy? The Importance of Endogenous Peer Group Formation." Econometrica 81(3), 855-882.