The economist Larry Summers famously suggested once that so few women become scientists and engineers because of discrimination, preference and even differences in innate ability.

In a paper published Monday in the Proceedings from the National Academy of Sciences, three business school professors tried to isolate the first of those reasons. They set up a lab experiment in which “managers” hired people to complete mathematical tasks that, on average, men and women performed equally well.

With no information about the job “applicants” other than their appearance, the managers (of both sexes) were twice as likely to hire a man over a woman.

The professors, Ernesto Reuben of Columbia Business School, Paola Sapienza of the Kellogg School of Management at Northwestern and Luigi Zingales of the Booth School of Business at the University of Chicago, tried another version of the experiment, which they labeled “Cheap Talk.” In this version, the job candidates were allowed to predict their own performance. Men tended to exaggerate their acumen, while women downplayed theirs. But the managers failed to compensate for that difference, and were again twice as likely to choose a man.
The bias persisted even when managers were given hard data about the applicants’ ability to perform the tasks in question. Managers were still one-and-a-half times more likely to hire a man. When they knowingly chose the lower-performing candidate, two-thirds of the time they were choosing the male applicant.

The managers were also given an “implicit association test,” or I.A.T., to measure their gender bias when it comes to math and science. “The very people who are biased against women about math, they’re also less likely to believe that men boast,” Mr. Zingales said. “So they’re picking up a negative stereotype of women, but not a negative stereotype of men.”

The study showed that hard evidence could reduce prejudice, Mr. Zingales said, but that it was even more important for managers to understand their own preexisting beliefs. “Anyone can do an I.A.T., and if they know that they are biased they should correct for that,” he said.

Mr. Zingales said the findings could apply to graduate school admissions as much as to the workplace. And, he said, they also shed light on why many women opt out of science and technology majors before they even reach graduation — they may assume that the negative response they are getting is based on their actual performance. “People don’t even learn,” he said, “that they are equally capable.”