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NEW RESEARCH PROVES GENDER BIAS EXTRAORDINARILY PREVALENT IN STEM CAREERS

Columbia Business School experiments show that hiring managers chose men twice as often for careers in science, technology, engineering and math




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NEW YORK — With everyone from the federal government to corporate America working to encourage more women to pursue careers in science, technology, engineering and math (STEM) fields, you would think the doors would be wide open to women of all backgrounds. A new study from Columbia Business School shows that this could not be further from the truth and that gender bias among hiring managers in STEM fields is extraordinarily prevalent.

“How Stereotypes Impair Women’s Careers in Science,” written by Ernesto Reuben, assistant professor of management at Columbia Business School, and recently published in *Proceedings of the National Academy of Sciences*, reveals the underlying biases of hiring managers, and also demonstrates the cost of discrimination.

“Studies that seek to answer why there are more men than women in STEM fields typically focus on women’s interests and choices,” said Professor Reuben. “This may be important, but our experiments show that another culprit of this phenomenon is that hiring managers possess an extraordinary level of gender bias when making decisions and filling positions, often times choosing the less qualified male over a superiorly qualified female.”

In an experiment in which participants were hired to perform a mathematical task, both male and female managers were twice as likely to hire a man than a woman — even when the managers had no information beyond a candidate’s appearance and, therefore, gender.

Dr. Reuben continued: “The end result is not only a less diverse workforce and a male-dominated STEM field, but also a detriment to these companies for hiring the less-skilled person for the job.”

The study is co-authored by the Kellogg School of Management’s Paola Sapienza and the Booth School of Business’s Luigi Zingales, is appearing this month in the PNAS.

The Field Study

To test the biases of hiring managers, Reuben and his research partners designed an experiment in which about 150 participants, in the role of job candidates, would be hired to perform a math assignment: correctly summing as many sets of four two-digit numbers as possible over a period of four minutes. Previous studies have shown that this type of arithmetic task is performed equally well by men and women. All of the candidates completed the task and were given their scores. In some versions of the experiment, the candidates were allowed to tell the managers how well they had performed, while in others their test results were not revealed.

Close to 200 other subjects, in the role of hiring managers, decided whether to hire a particular candidate to perform the task. The hiring managers also completed computer-based behavioral testing that indicated the degree to which they held stereotypes about the performance of men and women in science and math.

The Results

The experiment, done on both female and male hiring managers showed that when the hiring manager had no other information other than a candidate's gender, they were twice as likely to hire a man than a woman, because they incorrectly believed that men are more talented in science and math, the researchers found. This bias often led to hiring the less-capable job seeker.

"In some situations up to ninety percent of the time when a mistake was made, it was made in favor of a man," Reuben says.

Even more surprising was when the candidates were allowed to tell the managers how well they will perform; women were still only half as likely to be hired as men, the study showed. Unlike men, women who indicated that they will score higher than their competitors were overlooked. With these mathematical test scores in hand, the researchers were able to prove a tangible cost to discrimination of hiring managers.

"If you're hiring someone who scores less on the test, more often than not you are hiring the less qualified candidate."

Further versions of the experiment demonstrated the difficulties of confronting negative stereotypes. When hiring managers were given information about the candidates' actual performance, the bias against women was reduced, but not eliminated, the researchers found.

"If you believe that women aren't good in math and science, you often resist updating that belief — even when confronted by evidence to the contrary," Reuben says. "Raising awareness of this problem is a step in the right direction. Hiring managers need to disassociate themselves from general stereotypes and focus on the candidate. Leaving your personal experiences out of the process will likely land you the best candidate. Otherwise, you are hurting your company."

To learn more about cutting-edge research being performed by Columbia Business School faculty members, please visit www.gsb.columbia.edu.

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About Columbia Business School

Columbia Business School is the only world-class, Ivy League business school that delivers a learning experience where academic excellence meets with real-time exposure to the pulse of global business. Led by Dean Glenn Hubbard, the School's transformative curriculum bridges academic theory with unparalleled exposure to real-world business practice, equipping students with an entrepreneurial mindset that allows them to recognize, capture, and create opportunity in any business environment. The thought leadership of the School's faculty and staff, combined with the accomplishments of its distinguished alumni and position in the center of global business, means that the School's efforts have an immediate, measurable impact on the forces shaping business every day. To learn more about Columbia Business School's position at the very center of business, please visit www.gsb.columbia.edu.

About Professor Ernesto Reuben

Ernesto Reuben is an Assistant Professor at the Columbia Business School. His research interests lie within behavioral and public economics. Broadly speaking, he investigates the role played by social norms and particular psychological traits on activities that are economically relevant for public policy and business strategy. One of his main interests is studying the microfoundations of prosocial and antisocial behavior. In this line of research, he has also done experimental studies on the consequences of group heterogeneity on the enforcement of norms and the effectiveness of competition in promoting team output. More recently, he has been studying the effects of biases in beliefs on gender disparities in labor markets.

