UMass faculty study subtle gender bias in academic science careers

Goal is to increase recruitment, retention and advancement of women in the STEM disciplines

University of Massachusetts faculty from Worcester and Lowell are headed to Washington, D.C., this weekend to work on a key National Science Foundation (NSF) initiative to increase the number of women in academic science and engineering careers.

Thanks to a prestigious $750,000, three-year grant from the NSF’s ADVANCE program, UMass Lowell and UMass Medical School are creating an index to measure subtle gender biases in the workplace that can lead to missed career opportunities for women. UMass faculty will join researchers from across the country, beginning March 3, for a three-day NSF symposium on helping women succeed in academic science, technology, engineering and math (STEM) fields.

“This research is very important because it is the first step toward understanding and identifying the subtle biases that exist in the workplace,” said Judith Ockene, PhD, MEd, MA, the Barbara Helen Smith Chair in Preventive and Behavioral Medicine, professor of medicine and associate vice provost for gender and equity. “Gender biases in the workplace are nothing new, but what’s different today is the shift from overt sexism to a more subtle form of discrimination, often perpetrated unintentionally by well-meaning people. Once the biases can be scientifically measured, we can raise awareness and teach people to avoid making those mistakes.”

“Barriers to women’s success in STEM fields are well documented. The more subtle, yet powerful, biases still go unnoticed. If we can measure this phenomenon, it will enable us to take more effective action and better assess the success of change efforts,” said Nellie Tran, PhD, the principal investigator on the research project from UMass Lowell, a faculty member in UMass Lowell’s Department of Psychology, and an associate at the Center for Women and Work.

A long list of studies have noted the underrepresentation of women in higher academic ranks, executive and other leadership positions, and boards for both industry and academia. While men and women may make different life choices and there have been many gains in removing the most visible barriers to increased participation of women in science and engineering fields, the accumulation of subtle biases over years can have a profound negative effect on their career trajectory.

The collaboration between UMass Lowell and UMass Medical School—combining expertise in engineering and the physical and natural sciences with those in social and behavioral sciences—will achieve a scientific understanding and development of metrics for quantifying subtle gender biases. The goal is to refine existing techniques and design new methods to positively affect the recruitment, retention and advancement of women in the STEM disciplines.
“The majority of medical students are now female, as are a high percentage of our junior faculty in medicine. However, women faculty in medicine and science nationally have not advanced proportionately in academic rank or in leadership,” said Terence R. Flotte, MD, the Celia and Isaac Haidak Professor in Medical Education, executive deputy chancellor, provost, dean of the School of Medicine and professor of pediatrics at UMass Medical School. “In this competitive environment, we cannot afford to underutilize all of this talent.”

“I view this joint project as an excellent example of current and future partnerships between the UMass campuses—in this case, Lowell and Worcester,” said UMass Lowell Provost Ahmed Abdelal. “This ADVANCE partnership will provide the tools we need to make our campuses even more supportive environments for women faculty in STEM, as well as for all faculty, by creating the quantitative metrics to know if we are truly developing best practices.”

UMass Lowell will conduct research for ADVANCE through the Center for Women and Work, which, in addition to this grant, has received NSF funding for a number of other projects related to studying the challenges of women in STEM fields. As a prominent institution for study and research in STEM fields, UMass Lowell is committed to the advancement of women in these disciplines, Dr. Tran said, adding, “The Center for Women and Work is the perfect home for this project because of its commitment to generate research that supports equity for women.” Tran is joined on the project by UMass Lowell faculty from the departments of psychology and sociology including professors Paula Rayman, PhD, Ivy Ho, PhD, and Meg Bond, PhD, and Vice Provost for Research Julie Chen, PhD, a faculty member in mechanical engineering and a national leader in nanotechnology research.

With support from UMass Medical School Chancellor Michael F. Collins and Dean Flotte, the project is being led in Worcester by Dr. Ockene; Lori Pbert, PhD, professor of medicine; Sybil Crawford, PhD, professor of medicine; and Rashelle Hayes, PhD, assistant professor of medicine; Patricia Franklin MD, MBA, MPH, professor of orthopedics & physical rehabilitation and family medicine & community health; and Robert Milner, PhD, professor of neurology, and Luanne Thorndyke MD, professor of medicine, both in the Office of Faculty Affairs. Also involved are faculty from biochemistry & molecular pharmacology; human resources; diversity and inclusion; medicine, the Division of General Medicine and Primary Care; psychiatry; and quantitative health sciences.

In preparation for the project, researchers conducted pilot interviews with faculty on their experiences and found evidence of varying levels of perceived bias toward women.

“Exposure to subtle gender biases, such as not being included in conversations, made women less likely to feel that they belong in their workplace setting. This, in turn, causes them to have a lower productivity level and ultimately not get promoted,” said Ockene.

The products that are created through this project are expected to benefit not only women, but also men in all academic fields. The results also will provide the foundation for addressing similar subtle biases in non-academic and international environments.