
NSF ADVANCE Project: Resources on Barriers for Female STEM Faculty

1. Fox, M.F., & Colatrella, C. (2006). Participation, performance, and advancement of women in academic science and engineering: What is at issue and why. *Journal of Technology Transfer*. 31: 377-386.

In this study, the investigators conducted 20 semi-structured interviews with tenured and tenure-track women faculty in computer science, engineering, sciences, and social sciences at Georgia Tech, as part of Georgia Tech's NSF ADVANCE initiative. This study suggested that a fear of the consequences of discussing the role of personal factors in advancement is a barrier to female STEM faculty. Nearly all women faculty agreed that personal factors, including gender and getting along with male colleagues, matter in advancement. However, when asked whether it is "risky" to reveal or discuss the role of personal factors in advancement, 90% of the women interviewed answered "yes."

2. Xu, Y. (2008). Gender disparity in STEM disciplines: A study of faculty attrition and turnover intentions. *Research in Higher Education*. 49(7): 607-624.

This study analyzed data from the 1999 National Study of Postsecondary Faculty and found that women faculty's stronger turnover intentions were highly correlated with dissatisfaction with research support, advancement opportunities, and the free expression of ideas.

3. Fox, M.F. (2010). Women and men faculty in academic science and engineering: Social-organizational indicators and implications. *American Behavioral Scientist*. 53(7): 997-1012.

This study is based upon recent survey data of women and men faculty in doctoral-granting departments in computer science, engineering, and science fields in nine highly ranked research universities. Compared with men faculty, women faculty gave significantly lower rankings to aspects of their position/unit, signifying lower benefits of resources in access to equipment, sense of inclusion from department faculty, and recognition from faculty for their accomplishments. Women faculty gave lower ratings to departmental climates than men faculty, and they reported higher levels of work/family interference than men faculty.

4. Carrigan, C. (2011). The gendered division of labor among STEM faculty and the effects of critical mass. *Journal of Diversity in Higher Education*. 4(3): 131-146.

This study used data from a weighted sample of 13,884 faculty from the 2004 National Study of Postsecondary Faculty. The study provides evidence that lack of critical mass of women faculty in a discipline is a barrier to women STEM faculty. The author found evidence for a gendered division of labor (e.g., time spent on undergraduate instruction, which relates to reduced overall career satisfaction) that is mitigated by a critical mass of women faculty in a discipline. The study showed that women in disciplines with a critical mass of women allocate their time in ways that are more equivalent to their male colleagues. The results provide evidence that for women STEM faculty, being in a discipline with a critical mass of

women significantly increases overall career satisfaction, controlling for other personal and professional variables.

5. Settles, I.H., Cortina, L.M., Buchanan, N.T., & Miner, K.N. (2013). Derogation, discrimination and (dis)satisfaction with jobs in science: A gendered analysis. *Psychology of Women Quarterly*. 37(2): 179-191.

This study surveyed 353 faculty members (male and female) at the University of Michigan, as part of the University of Michigan's NSF ADVANCE program. Women faculty described significantly more formal gender discrimination (e.g., unequal access to resources), informal gender derogation (e.g., disparaging comments), and organizational sexism toward women than male faculty. All three types of gender mistreatment related to lower job satisfaction, via perceptions that the work environment was negative and alienating.