



Tomorrow's Doctors, Tomorrow's Cures®

Gender Harassment in STEMM

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Search Strategy

Scopus & Google Scholar: “Gender harassment”

Pubmed

("Sexual Harassment"[Mesh]) AND ("Faculty, Medical"[Mesh] OR "Academic Medical Centers"[Mesh] OR "Students, Medical"[Mesh] OR "Hospitals, Teaching"[Mesh] OR "Education, Medical"[Mesh] OR "Health Personnel"[Mesh])

References in this bibliography were selected from articles published in English in the last ten years and indexed in PubMed with the Medical Subject Headings related to medical education and sexual harassment” or with the term “gender harassment” in the title or abstract. Additional references were gathered from the Scientific Workforce Diversity Office at the National Institutes of Health. Opinion pieces, commentaries, and news articles were not included.

NIH Scientific Workforce Diversity Office. from <https://diversity.nih.gov/>
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The Scientific Workforce Diversity (SWD) Office leads NIH's effort to diversify the national scientific workforce and expand recruitment and retention. We invite you on this journey to establish NIH as the national scientific workforce diversity leader by widening and deepening our ways of thinking and practice. As a nation, we can reach new levels of inquiry by encouraging innovative, science-driven thinking made possible by broadening the diversity of thought that comes with a diverse scientific workforce.

Time's Up Healthcare. from <https://www.timesuphealthcare.org/>
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Affiliate of the Time's Up movement to raise awareness of sexual harassment in healthcare, advocate for meaningful improvements, and advance research on harassment and inequity.

Bakken, L. L., Byars-Winston, A., Gundermann, D. M., Ward, E. C., Slattery, A., King, A., . . . Taylor, R. E. (2010). Effects of an educational intervention on female biomedical scientists' research self-efficacy. *Advances in health sciences education : theory and practice*, 15(2), 167-183. doi: 10.1007/s10459-009-9190-2

<https://www.ncbi.nlm.nih.gov/pubmed/19774477>

<https://www.ncbi.nlm.nih.gov/pmc/PMC2848695/>

Women and people of color continue to be underrepresented among biomedical researchers to an alarming degree. Research interest and subsequent productivity have been shown to be affected by the research training environment through the mediating effects of research self-efficacy. This article presents the findings of a study to determine whether a short-term research training program coupled with an efficacy enhancing intervention for novice female biomedical scientists of diverse racial backgrounds would increase their research self-efficacy beliefs. Forty-three female biomedical scientists were randomized into a control or intervention group and 15 men participated as a control group. Research self-efficacy significantly increased for women who participated in the self-efficacy intervention workshop. Research self-efficacy within each group also significantly increased following the short-term research training program, but cross-group comparisons were not significant. These findings suggest that educational interventions that target sources of self-efficacy and provide domain-specific learning experiences are effective at increasing research self-efficacy for women and men. Further studies are needed to determine the longitudinal outcomes of this effort.

Best, C. L., Smith, D. W., Raymond, J. R., Sr., Greenberg, R. S., & Crouch, R. K. (2010). Preventing and responding to complaints of sexual harassment in an academic health center: a 10-year review from the Medical University of South Carolina. *Acad Med*, 85(4), 721-727. doi: 10.1097/ACM.0b013e3181d27fd0

There is a high incidence of sexual harassment and gender discrimination in academic health center (AHC) settings according to multiple surveys of medical students. Therefore, it is incumbent on AHCs to develop programs both to educate faculty, residents, and students and to handle complaints of possible episodes of sexual harassment or gender discrimination. Despite the apparent high prevalence of gender discrimination and sexual harassment, and the importance of handling complaints of gender discrimination and sexual harassment in a prompt, consistent, and rational manner, there are few descriptions of programs that address those concerns in AHCs. Herein, the authors describe their experiences in dealing with complaints of sexual harassment and gender discrimination for a 10-year period of time (late 1997 to early 2007) at the Medical University of South Carolina, through an Office of Gender Equity. They describe their complaint process, components of their prevention training, and the outcomes of 115 complaints. Key elements of their policies are highlighted. The authors offer an approach that could serve as a model for other AHCs.

Carnes, M., Bartels, C. M., Kaatz, A., & Kolehmainen, C. (2015). Why is John More Likely to Become Department Chair Than Jennifer? *Transactions of the American Clinical and Climatological Association*, 126, 197-214.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4530686/pdf/tacca1260000197.pdf>

This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text

analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents' experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate.

Carnes, M., Devine, P. G., Baier Manwell, L., Byars-Winston, A., Fine, E., Ford, C. E., . . . Sheridan, J. (2015). The effect of an intervention to break the gender bias habit for faculty at one institution: a cluster randomized, controlled trial. *Academic medicine : journal of the Association of American Medical Colleges*, *90*(2), 221-230. doi: 10.1097/ACM.0000000000000552

<https://www.ncbi.nlm.nih.gov/pubmed/25374039>

<https://www.ncbi.nlm.nih.gov/pmc/PMC4310758/>

PURPOSE: Despite sincere commitment to egalitarian, meritocratic principles, subtle gender bias persists, constraining women's opportunities for academic advancement. The authors implemented a pair-matched, single-blind, cluster randomized, controlled study of a gender-bias-habit-changing intervention at a large public university. **METHOD:** Participants were faculty in 92 departments or divisions at the University of Wisconsin-Madison. Between September 2010 and March 2012, experimental departments were offered a gender-bias-habit-changing intervention as a 2.5-hour workshop. Surveys measured gender bias awareness; motivation, self-efficacy, and outcome expectations to reduce bias; and gender equity action. A timed word categorization task measured implicit gender/leadership bias. Faculty completed a work-life survey before and after all experimental departments received the intervention. Control departments were offered workshops after data were collected. **RESULTS:** Linear mixed-effects models showed significantly greater changes post intervention for faculty in experimental versus control departments on several outcome measures, including self-efficacy to engage in gender-equity-promoting behaviors ($P = .013$). When $\geq 25\%$ of a department's faculty attended the workshop (26 of 46 departments), significant increases in self-reported action to promote gender equity occurred at three months ($P = .007$). Post intervention, faculty in experimental departments expressed greater perceptions of fit ($P = .024$), valuing of their research ($P = .019$), and comfort in raising personal and professional conflicts ($P = .025$). **CONCLUSIONS:** An intervention that facilitates intentional behavioral change can help faculty break the gender bias habit and change department climate in ways that should support the career advancement of women in academic medicine, science, and engineering.

Carr, P. L., Gunn, C., Raj, A., Kaplan, S., & Freund, K. M. (2017). Recruitment, promotion, and retention of women in academic medicine: how institutions are addressing gender disparities. *Women's Health Issues*, *27*(3), 374-381.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5435548/pdf/nihms840992.pdf>

OBJECTIVE: Greater numbers of women in medicine have not resulted in more women achieving senior positions. Programs supporting the recruitment, promotion, and retention of women in academic medicine could help to achieve greater advancement of more women to leadership positions. Qualitative research was conducted to understand such programs at 23 institutions and, using the social ecological model, examine how they operate at the individual, interpersonal, institutional, academic community, and policy levels.

METHODS: Telephone interviews were conducted with faculty representatives ($n = 44$) of the Group on Women in Medicine and Science, Diversity and Inclusion, or senior leaders with knowledge on gender climate in 24 medical schools. Four trained interviewers conducted semistructured interviews that addressed faculty perceptions of gender equity and advancement, which were audiotaped and transcribed. The data were categorized into three content areas—recruitment, promotion, and retention—and coded a priori for each area based on their social ecological level of operation.

FINDINGS: Participants from nearly 40% of the institutions reported no special programs for recruiting, promoting, or retaining women, largely describing such programming as unnecessary. Existing programs primarily targeted the individual and interpersonal levels simultaneously, via training, mentoring, and networking, or the institutional level, via search committee trainings, child and elder care, and spousal hiring programs. Lesser effort at the academic community and policy levels were described.

CONCLUSIONS: Our findings demonstrate that many U.S. medical schools have no programs supporting gender equity among medical faculty. Existing programs primarily target the individual or interpersonal level of the social ecological interaction. The academic community and broader policy environment require greater focus as levels with little attention to advancing women's careers. Universal multilevel efforts are needed to more effectively advance the careers of medical women faculty and support gender equity.

Carr, P. L., Raj, A., Kaplan, S. E., Terrin, N., Breeze, J. L., & Freund, K. M. (2018). Gender differences in academic medicine: retention, rank, and leadership comparisons from the National Faculty Survey. *Academic Medicine*, 93(11), 1694-1699.

PURPOSE: Prior studies have found that women in academic medicine do not advance or remain in their careers in parity with men. The authors examined a cohort of faculty from the 1995 National Faculty Survey to identify predictors of advancement, retention, and leadership for women faculty.

METHOD: The authors followed 1,273 faculty at 24 medical schools in the continental United States for 17 years to identify predictors of advancement, retention, and leadership for women faculty. Schools were balanced for public or private status and the four Association of American Medical Colleges geographic regions. The authors used regression models to adjust for covariates: seniority, department, academic setting, and race/ethnicity.

RESULTS: After adjusting for significant covariates, women were less likely than men to achieve the rank of professor (OR = 0.57; 95% CI, 0.43-0.78) or to remain in academic careers (OR = 0.68; 95% CI, 0.49-0.94). When number of refereed publications was added to the model, differences by gender in retention and attainment of senior rank were no longer significant. Male faculty were more likely to hold senior leadership positions after adjusting for publications (OR = 0.49; 95% CI, 0.35-0.69).

CONCLUSIONS: Gender disparities in rank, retention, and leadership remain across the career trajectories of the faculty cohort in this study. Women were less likely to attain senior-level positions than men, even after adjusting for publication-related productivity. Institutions must examine the climate for women to ensure their academic capital is fully utilized and equal opportunity exists for leadership.

Clauset, A., Arbesman, S., & Larremore, D. B. (2015). Systematic inequality and hierarchy in faculty hiring networks. *Science advances*, 1(1), e1400005-e1400005. doi: 10.1126/sciadv.1400005

<https://www.ncbi.nlm.nih.gov/pubmed/26601125>

<https://www.ncbi.nlm.nih.gov/pmc/PMC4644075/>

The faculty job market plays a fundamental role in shaping research priorities, educational outcomes, and career trajectories among scientists and institutions. However, a quantitative understanding of faculty hiring as a system is lacking. Using a simple technique to extract the institutional prestige ranking that best explains an observed faculty hiring network—who hires whose graduates as faculty—we present and analyze comprehensive placement data on nearly 19,000 regular faculty in three disparate disciplines. Across disciplines, we find that faculty hiring follows a common and steeply hierarchical structure that reflects profound social inequality. Furthermore, doctoral prestige alone better predicts ultimate placement than a U.S. News & World Report rank, women generally place worse than men, and increased institutional prestige leads to increased faculty production, better faculty placement, and a more influential position within the discipline. These results advance our ability to quantify the influence of prestige in academia and shed new light on the academic system.

Cortina, L. M., & Jagsi, R. (2018). What Can Medicine Learn From Social Science Studies of Sexual Harassment? What Can Medicine Learn From Social Science Studies of Sexual Harassment? *Annals of Internal Medicine*, 169(10), 716-717. doi: 10.7326/m18-2047

<https://doi.org/10.7326/M18-2047>

In the heels of the #MeToo movement, 2018 saw the release of a landmark National Academies of Science, Engineering, and Medicine (NAEM) report on sexual harassment (1). In addition, the American College of Physicians released a position statement opposing “harassment, discrimination, and retaliation of any form based on characteristics of personal identity, including gender, in the medical profession”—explicitly including sexual harassment (2). However, what do we mean by the term sexual harassment? What actions “count” as sexual harassment, and to what effect? What factors increase risk for harassment, and how can institutions and professional groups act to reduce its frequency? Scholars in the social sciences have investigated these questions for years (3), developing taxonomies and making discoveries that merit consideration by the medical profession, which is far from immune from these injustices (4). Here, we share this science and terminology to facilitate culture change in the medical profession.

Dresden, B. E., Dresden, A. Y., Ridge, R. D., & Yamawaki, N. (2018). No Girls Allowed: Women in Male-Dominated Majors Experience Increased Gender Harassment and Bias. *Psychological reports*, 121(3), 459-474. doi: 10.1177/0033294117730357

The prevalence of gender harassment in male-dominated workforces has been well established, but little is known regarding the experiences of women in male-dominated majors within academia. The current study examines the experiences and gender-related biases of 146 male and female students in male-dominated (MD) and gender-equivalent (GE)

majors. This study hypothesizes that men from MD majors, as opposed to GE majors, will exhibit more explicit and implicit bias regarding women in positions of power and authority, resulting in a higher prevalence of gender harassment towards women in MD majors. Results showed that there was no significant difference in self-reported explicit bias against women in positions of power and authority between men from MD and GE majors, but there was significantly more implicit bias among men from MD majors as opposed to GE majors. Additionally, women from MD majors experienced significantly more gender harassment than women from GE majors. Implications of these findings and suggestions to assist those working in education to combat these biases and instances of harassment are discussed.

Files, J. A., Mayer, A. P., Ko, M. G., Friedrich, P., Jenkins, M., Bryan, M. J., . . . Hayes, S. N. (2017). Speaker Introductions at Internal Medicine Grand Rounds: Forms of Address Reveal Gender Bias. *Journal of women's health (2002)*, 26(5), 413-419. doi: 10.1089/jwh.2016.6044

BACKGROUND: Gender bias has been identified as one of the drivers of gender disparity in academic medicine. Bias may be reinforced by gender subordinating language or differential use of formality in forms of address. Professional titles may influence the perceived expertise and authority of the referenced individual. The objective of this study is to examine how professional titles were used in the same and mixed-gender speaker introductions at Internal Medicine Grand Rounds (IMGR). **METHODS:** A retrospective observational study of video-archived speaker introductions at consecutive IMGR was conducted at two different locations (Arizona, Minnesota) of an academic medical center. Introducers and speakers at IMGR were physician and scientist peers holding MD, PhD, or MD/PhD degrees. The primary outcome was whether or not a speaker's professional title was used during the first form of address during speaker introductions at IMGR. As secondary outcomes, we evaluated whether or not the speakers professional title was used in any form of address during the introduction. **RESULTS:** Three hundred twenty-one forms of address were analyzed. Female introducers were more likely to use professional titles when introducing any speaker during the first form of address compared with male introducers (96.2% [102/106] vs. 65.6% [141/215]; $p < 0.001$). Female dyads utilized formal titles during the first form of address 97.8% (45/46) compared with male dyads who utilized a formal title 72.4% (110/152) of the time ($p = 0.007$). In mixed-gender dyads, where the introducer was female and speaker male, formal titles were used 95.0% (57/60) of the time. Male introducers of female speakers utilized professional titles 49.2% (31/63) of the time ($p < 0.001$). **CONCLUSION:** In this study, women introduced by men at IMGR were less likely to be addressed by professional title than were men introduced by men. Differential formality in speaker introductions may amplify isolation, marginalization, and professional discomfiture expressed by women faculty in academic medicine.

Fnais, N., Soobiah, C., Chen, M. H., Lillie, E., Perrier, L., Tashkhandi, M., . . . Tricco, A. C. (2014). Harassment and discrimination in medical training: a systematic review and meta-analysis. *Academic Medicine*, 89(5), 817-827.

PURPOSE: Harassment and discrimination include a wide range of behaviors that medical trainees perceive as being humiliating, hostile, or abusive. To understand the significance of such mistreatment and to explore potential preventive strategies, the authors conducted a systematic review and meta-analysis to examine the prevalence, risk factors, and sources of harassment and discrimination among medical trainees.

METHOD: In 2011, the authors identified relevant studies by searching MEDLINE and EMBASE, scanning reference lists of relevant studies, and contacting experts. They included studies that reported the prevalence, risk factors, and sources of harassment and discrimination among medical trainees. Two reviewers independently screened all articles and abstracted study and participant characteristics and study results. The authors assessed the methodological quality in individual studies using the Newcastle-Ottawa Scale. They also conducted a meta-analysis.

RESULTS: The authors included 57 cross-sectional and 2 cohort studies in their review. The meta-analysis of 51 studies demonstrated that 59.4% of medical trainees had experienced at least one form of harassment or discrimination during their training (95% confidence interval [CI]: 52.0%-66.7%). Verbal harassment was the most commonly cited form of harassment (prevalence: 63.0%; 95% CI: 54.8%-71.2%). Consultants were the most commonly cited source of harassment and discrimination, followed by patients or patients' families (34.4% and 21.9%, respectively).

CONCLUSIONS: This review demonstrates the surprisingly high prevalence of harassment and discrimination among medical trainees that has not declined over time. The authors recommend both drafting policies and promoting cultural change within academic institutions to prevent future abuse.

Girod, S., Fassiotto, M., Grewal, D., Ku, M. C., Sriram, N., Nosek, B. A., & Valantine, H. (2016). Reducing Implicit Gender Leadership Bias in Academic Medicine With an Educational Intervention. *Acad Med*, *91*(8), 1143-1150. doi: 10.1097/acm.0000000000001099

PURPOSE: One challenge academic health centers face is to advance female faculty to leadership positions and retain them there in numbers equal to men, especially given the equal representation of women and men among graduates of medicine and biological sciences over the last 10 years. The purpose of this study is to investigate the explicit and implicit biases favoring men as leaders, among both men and women faculty, and to assess whether these attitudes change following an educational intervention. **METHOD:** The authors used a standardized, 20-minute educational intervention to educate faculty about implicit biases and strategies for overcoming them. Next, they assessed the effect of this intervention. From March 2012 through April 2013, 281 faculty members participated in the intervention across 13 of 18 clinical departments. **RESULTS:** The study assessed faculty members' perceptions of bias as well as their explicit and implicit attitudes toward gender and leadership. Results indicated that the intervention significantly changed all faculty members' perceptions of bias ($P < .05$ across all eight measures). Although, as expected, explicit biases did not change following the intervention, the intervention did have a small but significant positive effect on the implicit biases surrounding women and leadership of all participants regardless of age or gender ($P = .008$). **CONCLUSIONS:** These results suggest that providing education on bias and strategies for reducing it can serve as an important step toward reducing gender bias in academic medicine and, ultimately, promoting institutional change, specifically the promoting of women to higher ranks.

Isaac, C., Lee, B., & Carnes, M. (2009). Interventions that affect gender bias in hiring: a systematic review. *Acad Med*, *84*(10), 1440-1446. doi: 10.1097/ACM.0b013e3181b6ba00

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4554714/pdf/nihms-715043.pdf>

PURPOSE: To systematically review experimental evidence for interventions mitigating gender bias in employment. Unconscious endorsement of gender stereotypes can undermine academic medicine's commitment to gender equity. **METHOD:** The authors performed electronic and hand searches for randomized controlled studies since 1973 of interventions that affect gender differences in evaluation of job applicants. Twenty-seven studies met all inclusion criteria. Interventions fell into three categories: application information, applicant features, and rating conditions. **RESULTS:** The studies identified gender bias as the difference in ratings or perceptions of men and women with identical qualifications. Studies reaffirmed negative bias against women being evaluated for positions traditionally or predominantly held by men (male sex-typed jobs). The assessments of male and female raters rarely differed. Interventions that provided raters with clear evidence of job-relevant competencies were effective. However, clearly competent women were rated lower than equivalent men for male sex-typed jobs unless evidence of communal qualities was also provided. A commitment to the value of credentials before review of applicants and women's presence at above 25% of the applicant pool eliminated bias against women. Two studies found unconscious resistance to "antibias" training, which could be overcome with distraction or an intervening task. Explicit employment equity policies and an attractive appearance benefited men more than women, whereas repeated employment gaps were more detrimental to men. Masculine-scented perfume favored the hiring of both sexes. Negative bias occurred against women who expressed anger or who were perceived as self-promoting. **CONCLUSIONS:** High-level evidence exists for strategies to mitigate gender bias in hiring.

Jagsi, R., Griffith, K. A., Jones, R., Perumalswami, C. R., Ubel, P., & Stewart, A. (2016). Sexual harassment and discrimination experiences of academic medical faculty. *Jama*, *315*(19), 2120-2121.

<https://jamanetwork.com/journals/jama/articlepdf/2521958/jld160008.pdf>

In this sample of clinician-researchers, 30% of women reported having experienced sexual harassment compared with 4% of men. Although a lower proportion reported these experiences than in a 1995 sample, the difference appears large given that the women began their careers after the proportion of female medical students exceeded 40%.

Ladika, S. (2018). Sexual Harassment: Health Care, It Is #YouToo. *Managed care (Langhorne, Pa.)*, *27*(2), 14-17.

There's no question that sexual harassment-and worse-is common at the country's hospitals, clinics, research labs, and doctor's offices. Health care's gender imbalances create situations that are ripe for abuse: Women make up the majority of the workforce in health care but men still dominate positions of authority.

Leskinen, E. A., & Cortina, L. M. (2014). Dimensions of disrespect: Mapping and measuring gender harassment in organizations. *Psychology of Women Quarterly, 38*(1), 107-123.

The current study broadens our understanding of workplace gender harassment (a subdomain of sex-based harassment) by developing an expanded taxonomy and measurement instrument. We move beyond sexual insults to include hostility targeting one's gender, gender role (non)conformity, and motherhood status. In Study 1, we convened a panel of seven subject matter experts to brainstorm behaviors covering the full content domain of gender harassment, which they later grouped into categories in an open card-sorting task. To tap these categories, we combined survey items from the existing literature with a pool of new items. In Study 2, we administered these items to 425 working women. Exploratory principal axis factoring and confirmatory factor analyses revealed an underlying five-factor structure in these data, reflecting both new and extant themes from the literature. This work culminated in a 20-item scale, the Gender Experiences Questionnaire, assessing five dimensions of gender harassment: Sexist Remarks, Sexually Crude/Offensive Behavior, Infantilization, Work/Family Policing, and Gender Policing. This multidimensional conceptualization of gender harassment, coupled with the new measure, offers a more nuanced view of women's experiences of hostile work environments. This can further the work of researchers, human resources personnel, managers, educators, policy makers, law scholars and practitioners, and other specialists seeking to understand (and scale back) harassment based on sex and gender. This understanding can potentially inform intervention and prevention efforts in any organized setting (e.g., work, school, and politics) where gender may be devalued.

Leskinen, E. A., Cortina, L. M., & Kabat, D. B. (2011). Gender harassment: Broadening our understanding of sex-based harassment at work. *Law and human behavior, 35*(1), 25-39.

<https://link.springer.com/article/10.1007/s10979-010-9241-5>

This study challenges the common legal and organizational practice of privileging sexual advance forms of sex-based harassment, while neglecting gender harassment. Survey data came from women working in two male-dominated contexts: the military and the legal profession. Their responses to the Sexual Experiences Questionnaire (SEQ) revealed five typical profiles of harassment: low victimization, gender harassment, gender harassment with unwanted sexual attention, moderate victimization, and high victimization. The vast majority of harassment victims fell into one of the first two groups, which described virtually no unwanted sexual advances. When compared to non-victims, gender-harassed women showed significant decrements in professional and psychological well-being. These findings underscore the seriousness of gender harassment, which merits greater attention by both law and social science.

Leskinen, E. A., Rabelo, V. C., & Cortina, L. M. (2015). Gender stereotyping and harassment: A "catch-22" for women in the workplace. *Psychology, Public Policy, and Law, 21*(2), 192.

United States law recognizes the illegality of sex/gender stereotyping when it drives formal discrimination in employment, as in *Price Waterhouse v. Hopkins* (1989). In the present study, we investigated whether such stereotyping—and attendant intolerance for counterstereotypicality—also breeds discrimination in the form of gender harassment. That is, we examined whether and how different components of gender counterstereotypicality combined to affect women's risk of being targeted with harassment. Using a sample of 425 working women, we tested how deviations from stereotypical femininity—masculine appearance, masculine-typed behaviors (aggression and self-reliance), and work in a masculine context—related to women's experiences of gender harassment (specifically, sexist remarks and gender policing). We found that women were caught in a "catch-22:" Professional success in many highly compensated fields requires stereotypically masculine behavior and appearance, but those same attributes increased women's harassment risk. Taken together, our findings carry methodological, practical, and legal implications. If working women are penalized for their gender deviance through different forms of gender harassment, particularly in certain work domains, this may fuel gender discrepancies in particular fields. There could be a cumulative impact on women throughout their careers, from hiring to evaluation to advancement up the ranks. Methodologically, this study can expand our understandings of how to operationalize gender role violation and parse apart different manifestations of workplace harassment. It can also inform debates about relationships between sex stereotyping, harassment, and the law.

McDonald, P. (2012). Workplace sexual harassment 30 years on: A review of the literature. *International Journal of Management Reviews, 14*(1), 1-17.

Despite its proscription in legal jurisdictions around the world, workplace sexual harassment (SH) continues to be experienced by many women and some men in a variety of organizational settings. The aims of this review article are threefold: first, with a focus on workplace SH as it pertains to management and organizations, to synthesize the accumulated

state of knowledge in the field; second, to evaluate this evidence, highlighting competing perspectives; and third, to canvass areas in need of further investigation. Various ascribed through individual (psychological or legal consciousness) frameworks, sociocultural explanations and organizational perspectives, research consistently demonstrates that, like other forms of sexual violence, individuals who experience workplace SH suffer significant psychological, health- and job-related consequences. Yet they often do not make formal complaints through internal organizational procedures or to outside bodies. Laws, structural reforms and policy initiatives have had some success in raising awareness of the problem and have shaped rules and norms in the employment context. However, there is an imperative to target further workplace actions to effectively prevent and respond to SH.

Morgan, A. U., Chaiyachati, K. H., Weissman, G. E., & Liao, J. M. (2018). Eliminating Gender-Based Bias in Academic Medicine: More Than Naming the "Elephant in the Room". *Journal of general internal medicine*, *33*(6), 966-968. doi: 10.1007/s11606-018-4411-0

<https://link.springer.com/content/pdf/10.1007%2Fs11606-018-4411-0.pdf>

Gender-based discrimination and bias are widespread in professional settings, including academic medicine. Overt manifestations such as sexual harassment have long been identified but attention is only more recently turning towards subtler forms of bias, including inequity in promotion and compensation. Barriers to progress vary across institutions and include lack of awareness, inadequate training, poor informational transparency, and challenging power dynamics. We propose five solutions that the academic medical community can adopt to not only name, but also address, gender-based bias as the proverbial elephant in the room: definitively identify the systemic nature of the problem, prompt those with influence and power to advance a culture of equity, broadly incorporate evidence-based explicit anti-sexist training, increase transparency of information related to professional development and compensation, and use robust research methods to study the drivers and potential solutions of gender inequity within academic medicine. While implementing these proposals is no small task, doing so is an important step in helping the academic medical community become more just.

Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences of the United States of America*, *109*(41), 16474-16479. doi: 10.1073/pnas.1211286109

<https://www.ncbi.nlm.nih.gov/pubmed/22988126>

<https://www.ncbi.nlm.nih.gov/pmc/PMC3478626/>

<https://www.pnas.org/content/pnas/109/41/16474.full.pdf>

Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student who was randomly assigned either a male or female name for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.

Moutier, C., Wingard, D., Gudea, M., Jeste, D., Goodman, S., & Reznik, V. (2016). The Culture of Academic Medicine: Faculty Behaviors Impacting the Learning Environment. *Academic psychiatry: the journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry*, *40*(6), 912-918. doi: 10.1007/s40596-016-0582-3

<https://link.springer.com/article/10.1007%2Fs40596-016-0582-3>

OBJECTIVE: The culture of academic medical institutions impacts trainee education, among many other faculty and patient outcomes. Disrespectful behavior by faculty is one of the most challenging and common problems that, left unattended, disrupts healthy work and learning environments. Conversely, a respectful environment facilitates

learning, creates a sense of safety, and rewards professionalism. The authors developed surveys and an intervention in an effort to better understand and improve climate concerns among health sciences faculty at the University of California, San Diego (UCSD), a research-intense, public, academic medical center. METHODS: An online "climate survey" of all UC San Diego health sciences faculty was conducted in 2011-2012. A strategic campaign to address the behavioral issues identified in the initial survey was subsequently launched. In 2015, the climate was re-evaluated in order to assess the effectiveness of the intervention. RESULTS: A total of 478 faculty members (223 women, 235 men, 35 % of faculty) completed the baseline survey, reporting relatively low levels of observed sexual harassment (7 %). However, faculty reported concerning rates of other disruptive behaviors: derogatory comments (29 %), anger outbursts (25 %), and hostile communication (25 %). Women and mid-level faculty were more likely to report these behavioral concerns than men and junior or senior colleagues. Three years after an institutional strategy was initiated, 729 faculty members (50 % of the faculty) completed a follow-up survey. The 2015 survey results indicate significant improvement in numerous climate factors, including overall respectful behaviors, as well as behaviors related to gender. CONCLUSIONS: In order to enhance a culture of respect in the learning environment, institutions can effectively engage academic leaders and faculty at all levels to address disruptive behavior and enhance positive climate factors.

National Academies of Sciences, E., & Medicine. (2017). *Effective Mentoring in STEMM: Practice, Research, and Future Directions: Proceedings of a Workshop—in Brief*. Washington, DC: The National Academies Press.

<https://www.nap.edu/catalog/24815/effective-mentoring-in-stemm-practice-research-and-future-directions-proceedings>
Mentoring has long been understood as a beneficial component of academic and professional development. But investigations of the attributes of effective mentoring interactions in science, technology, engineering, mathematics, and medical (STEMM) education are only now starting to shed light on how exactly these complex and dynamic relationships form, evolve, and impact the lives and careers of the current and next generation of STEMM professionals. To explore the conversation surrounding this highly interdisciplinary field, the Board on Higher Education and Workforce and the Committee on Women in Science, Engineering, and Medicine, in collaboration with the Board on Science Education and the Teacher Advisory Council, convened a workshop in Washington D.C. on February 9-10, 2017. Educators, scientists, engineers, industry leaders, and scholars from a wide range of career stages focused on identifying successful practices and metrics for mentoring students in STEMM career pathways. Workshop sessions spanned topics across the mentoring field: definitions, theories, practices, perspectives, evidence, research, identity, and reflection, with a particular emphasis on identifying the evidence supporting successful mentoring practices for women and students of color across high school and postsecondary education. This publication briefly summarizes the presentations and discussions from the workshop.

National Academies of Sciences, E., & Medicine. (2018). *Sexual harassment of women: climate, culture, and consequences in academic sciences, engineering, and medicine*: National Academies Press.

<https://www.nap.edu/catalog/24994/sexual-harassment-of-women-climate-culture-and-consequences-in-academic>
Over the last few decades, research, activity, and funding has been devoted to improving the recruitment, retention, and advancement of women in the fields of science, engineering, and medicine. In recent years the diversity of those participating in these fields, particularly the participation of women, has improved and there are significantly more women entering careers and studying science, engineering, and medicine than ever before. However, as women increasingly enter these fields they face biases and barriers and it is not surprising that sexual harassment is one of these barriers.

Plaut, S. M., & Baker, D. (2011). Teacher-student relationships in medical education: boundary considerations. *Medical teacher*, 33(10), 828-833. doi: 10.3109/0142159x.2010.541536

<https://www.tandfonline.com/doi/pdf/10.3109/0142159X.2010.541536?needAccess=true>

BACKGROUND: Despite recent attention to the area of student mistreatment, there has been less emphasis on the problem of excessive or inappropriate intimacy between teachers and students. Although a certain amount of closeness to faculty is important to the professional socialization of students, excessive or inappropriate closeness can be coercive because of the power differential between teacher and student. This can cause discomfort, discrimination, or psychological and academic harm to students, who often feel too intimidated to express concern. AIMS: We provide a framework that allows both faculty and students to discuss these issues more openly and to consider constructive strategies in their own settings. METHOD: We collected examples of boundary issues that individuals had experienced or knew that others had experienced in teacher-student relationships. RESULTS: Examples of excessive intimacy

include patterns of expressing favoritism for personal reasons, disclosure about personal or academic problems experienced by the teacher, and socializing with selected students, up to and including dating and consensual sexual involvement. CONCLUSIONS: Personal and situational risk factors may make teachers or students more prone to cross healthy boundaries. Education about boundary issues, including discussion of case vignettes, may help build awareness and thus help foster more balanced teacher-student relationships.

Sczesny, S., Formanowicz, M., & Moser, F. (2016). Can Gender-Fair Language Reduce Gender Stereotyping and Discrimination? *Frontiers in psychology, 7*, 25. doi: 10.3389/fpsyg.2016.00025

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4735429/pdf/fpsyg-07-00025.pdf>

Gender-fair language (GFL) aims at reducing gender stereotyping and discrimination. Two principle strategies have been employed to make languages gender-fair and to treat women and men symmetrically: neutralization and feminization. Neutralization is achieved, for example, by replacing male-masculine forms (policeman) with gender-unmarked forms (police officer), whereas feminization relies on the use of feminine forms to make female referents visible (i.e., the applicant... he or she instead of the applicant... he). By integrating research on (1) language structures, (2) language policies, and (3) individual language behavior, we provide a critical review of how GFL contributes to the reduction of gender stereotyping and discrimination. Our review provides a basis for future research and for scientifically based policy-making.

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.

In the current study of 353 science and engineering faculty members, we examined whether three types of gender-based mistreatment might "chill" individuals' perceptions of the professional climate, which might in turn undermine satisfaction with their jobs. We also tested gender differences in these relationships. Results indicated that for women, the relationship between gender discrimination (e.g., unequal access to resources) and job satisfaction was mediated by scholarly alienation and a negative workplace climate; gender derogation (e.g., disparaging comments) was related to organizational sexism toward women (OSTW), which was associated with perceptions of scholarly alienation and a negative workplace climate; these perceptions in turn predicted lower job satisfaction. For men, gender derogation was indirectly related to job satisfaction via scholarly alienation, and OSTW was indirectly related to job satisfaction via both climate variables. Analyses indicated that most of these indirect effects were stronger for women than men. We discuss these results for both sexes and suggest reasons why men's climate perceptions may be "chilled" by exposure to sexism toward women. We also discuss implications for individuals working with women in male-dominated environments, such as organizational administrators and clinical practitioners.

Sheltzer, J. M., & Smith, J. C. (2014). Elite male faculty in the life sciences employ fewer women. *Proceedings of the National Academy of Sciences of the United States of America, 111*(28), 10107-10112. doi: 10.1073/pnas.1403334111

<https://www.ncbi.nlm.nih.gov/pubmed/24982167>

<https://www.ncbi.nlm.nih.gov/pmc/PMC4104900/>

<https://www.pnas.org/content/pnas/111/28/10107.full.pdf>

Women make up over one-half of all doctoral recipients in biology-related fields but are vastly underrepresented at the faculty level in the life sciences. To explore the current causes of women's underrepresentation in biology, we collected publicly accessible data from university directories and faculty websites about the composition of biology laboratories at leading academic institutions in the United States. We found that male faculty members tended to employ fewer female graduate students and postdoctoral researchers (postdocs) than female faculty members did. Furthermore, elite male faculty--those whose research was funded by the Howard Hughes Medical Institute, who had been elected to the National Academy of Sciences, or who had won a major career award--trained significantly fewer women than other male faculty members. In contrast, elite female faculty did not exhibit a gender bias in employment patterns. New assistant professors at the institutions that we surveyed were largely comprised of postdoctoral researchers from these prominent laboratories, and correspondingly, the laboratories that produced assistant professors had an overabundance of male postdocs. Thus, one cause of the leaky pipeline in biomedical research may be the exclusion of women, or their self-selected absence, from certain high-achieving laboratories.

Siller, H., Tauber, G., Komlenac, N., & Hochleitner, M. (2017). Gender differences and similarities in medical students' experiences of mistreatment by various groups of perpetrators. *BMC medical education, 17*(1), 134. doi: 10.1186/s12909-017-0974-4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5557324/pdf/12909_2017_Article_974.pdf

BACKGROUND: Mistreatment of medical students during medical education is a widespread concern. Studies have shown that medical students report the most mistreatment compared to students of other study programs and that the prevalence of mistreatment peaks during clinical training. For this reason, a study was conducted to assess prevalence of mistreatment among medical students committed by various groups of people. The focus was to identify whether gender was associated with the experience of mistreatment. Additionally, students' perception of university climate for reporting sexual harassment was assessed. **METHOD:** In the study 88 medical students (45 women, 43 men) participated. A modified version of the Questionnaire on Student Abuse was used to assess students' experience of various types of mistreatment and associated distress during medical education. To explore factors that could be associated with this experience the organizational climate for reporting sexual harassment was assessed with the Psychological Climate for Sexual Harassment. **RESULT:** The most often cited perpetrators of mistreatment were strangers (79.5%), friends (75.0%) and university staff (68.2%). Strangers mostly committed psychological mistreatment and sexual harassment, whereas friends additionally engaged in physical mistreatment of medical students. The most common form of mistreatment conducted by university staff was humiliation of students. These kinds of psychological mistreatment were reported to be distressing (43%). Gender differences were found in the prevalence of mistreatment. Women experienced more sexual harassment and humiliation than did men. On the other hand, men experienced more physical mistreatment than did women. Women reported experiencing more distress from mistreatment experiences than did men and also more often reported being mistreated by university staff than did men. Women perceived a greater risk in reporting sexual harassment to the organization than did men. **CONCLUSION:** Mistreatment of female and male students should be focused on using a gender perspective because types of mistreatment can differ by gender. Additionally, interventions should include the societal level as there was a high prevalence of mistreatment perpetrated by strangers. Also the issue of trust in the university needs to be addressed and the organization is called on to visibly demonstrate that it represents and protects its students as well as its staff.

Tricco, A. C., Thomas, S. M., Antony, J., Rios, P., Robson, R., Pattani, R., . . . Straus, S. E. (2017). Strategies to Prevent or Reduce Gender Bias in Peer Review of Research Grants: A Rapid Scoping Review. *PLoS one*, 12(1), e0169718. doi: 10.1371/journal.pone.0169718

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5218731/pdf/pone.0169718.pdf>

OBJECTIVE: To review the literature on strategies implemented or identified to prevent or reduce gender bias in peer review of research grants. **METHODS:** Studies of any type of qualitative or quantitative design examining interventions to reduce or prevent gender bias during the peer review of health-related research grants were included. Electronic databases including MEDLINE, EMBASE, Education Resources Information Center (ERIC), PsycINFO, Joanna Briggs, the Cochrane Library, Evidence Based Medicine (EBM) Reviews, and the Campbell Library were searched from 2005 to April 2016. A search for grey (i.e., difficult to locate or unpublished) literature was conducted and experts in the field were consulted to identify additional potentially relevant articles. Two individuals screened titles and abstracts, full-text articles, and abstracted data with discrepancies resolved by a third person consistently. **RESULTS:** After screening 5524 citations and 170 full-text articles, one article evaluating gender-blinding of grant applications using an uncontrolled before-after study design was included. In this study, 891 applications for long-term fellowships in 2006 were included and 47% of the applicants were women. These were scored by 13 peer reviewers (38% were women). The intervention included eliminating references to gender from the applications, letters of recommendations, and interview reports that were sent to the committee members for evaluation. The proportion of successful applications led by women did not change with gender-blinding, although the number of successful applications that were led by men increased slightly. **CONCLUSIONS:** There is limited research on interventions to mitigate gender bias in the peer review of grants. Only one study was identified and no difference in the proportion of women who were successful in receiving grant funding was observed. Our results suggest that interventions to prevent gender bias should be adapted and tested in the context of grant peer review to determine if they will have an impact.

Viglianti, E. M., Oliverio, A. L., & Meeks, L. M. (2018). Sexual harassment and abuse: when the patient is the perpetrator. *Lancet (London, England)*, 392(10145), 368-370. doi: 10.1016/s0140-6736(18)31502-2

A young female physician receiving unwelcomed sexual attention from a patient and feeling unsafe is not a new problem. However, these encounters destabilise patient-physician relationships and can have negative consequences for the physician's future. The patient-physician relationship is founded on trust and entered into by mutual consent. Now

that more than 50% of medical students in the UK and the USA are women, systematic approaches are needed to ensure that female clinicians can safely treat patients in populations where sexism is common.

Walters, J., & McNeely, C. L. (2010). Recasting Title IX: Addressing gender equity in the science, technology, engineering, and mathematics professoriate. *Review of Policy Research*, 27(3), 317-332.

Questions of gender equity and the underrepresentation of women in the science, technology, engineering, and mathematics (STEM) professoriate in U.S. institutions of higher education have become central issues in debates on the role and makeup of the STEM workforce in today's innovation-driven economy. In response, policy makers, advocacy groups, academics, and other stakeholders have called for the dedicated enforcement of Title IX of the Education Amendments of 1972 as a tool for combating gender inequities in the academic workforce. Although previously applied primarily to gender bias in athletic programs and participation, Title IX was created to address myriad aspects of gender equity in educational institutions and, as such, currently is being invoked in the realm of STEM academic employment. Accordingly, we analyze Title IX relative to categories of potential regulatory development in light of the policy environment and related dynamics. Providing an historical overview of Title IX and its associated regulations as background, we characterize and delineate its relevance to gender disparities in the STEM professoriate, identifying areas for policy consideration and future application.

Witteman, H. O., Hendricks, M., Straus, S., & Tannenbaum, C. (2019). Are gender gaps due to evaluations of the applicant or the science? A natural experiment at a national funding agency. *The Lancet*, 393(10171), 531-540. doi: [https://doi.org/10.1016/S0140-6736\(18\)32611-4](https://doi.org/10.1016/S0140-6736(18)32611-4)

<http://www.sciencedirect.com/science/article/pii/S0140673618326114>

<https://www.sciencedirect.com/science/article/pii/S0140673618326114?via%3Dihub>

Summary Background Across countries and disciplines, studies show male researchers receive more research funding than their female peers. Because most studies have been observational, it is unclear whether imbalances stem from evaluations of female research investigators or of their proposed research. In 2014, the Canadian Institutes of Health Research created a natural experiment by dividing investigator-initiated funding applications into two new grant programmes: one with and one without an explicit review focus on the calibre of the principal investigator. Methods We analysed application success among 23 918 grant applications from 7093 principal investigators in all investigator-initiated Canadian Institutes of Health Research grant programmes between 2011 and 2016. We used generalised estimating equations to account for multiple applications by the same applicant and compared differences in application success between male and female principal investigators under different review criteria. Findings Overall application success across competitions was 15.8%. After adjusting for age and research domain, the predicted probability of success in traditional programmes was 0.9 percentage points lower for female applicants than male applicants (95% CI 2.0 lower–0.2 higher; odds ratio 0.934, 95% CI 0.854–1.022). In the new programme, in which review focused on the proposed science, the gap remained 0.9 percentage points (3.2 lower–1.4 higher; 0.998, 0.794–1.229). In the new programme with an explicit review focus on the calibre of the principal investigator, the gap was 4.0 percentage points (6.7 lower–1.3 lower; 0.705, 0.519–0.960). Interpretation Gender gaps in grant funding are attributable to less favourable assessments of women as principal investigators, not of the quality of their proposed research. We discuss reasons less favourable assessments might occur and strategies to foster fair and rigorous peer review. Funding None.

Woodcock, A., Hernandez, P. R., & Schultz, P. W. (2016). Diversifying Science: Intervention Programs Moderate the Effect of Stereotype Threat on Motivation and Career Choice. *Social psychological and personality science*, 7(2), 184-192. doi: [10.1177/1948550615608401](https://doi.org/10.1177/1948550615608401)

<https://www.ncbi.nlm.nih.gov/pubmed/27668075>

<https://www.ncbi.nlm.nih.gov/pmc/PMC5034946/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5034946/pdf/nihms782097.pdf>

Stereotypes influence academic interests, performance, and ultimately career goals. The long-standing National Institutes of Health Research Initiative for Scientific Enhancement (RISE) training program has been shown to be effective at retaining underrepresented minorities in science. We argue that programs such as RISE may alter the experience and impact of stereotype threat on academic achievement goals and future engagement in a scientific career. We report analyses of a national sample comparing RISE students with a propensity score-matched control group over a 6-year period. Mediation analyses revealed that while RISE program membership did not buffer students from stereotype threat, it changed students' downstream responses and ultimately their academic outcomes. Nonprogram students

were less likely than RISE students to persist in the sciences, partially because feelings of stereotype threat diminished their adoption of mastery goals. We discuss how these findings inform stereotype threat and goal orientation theories and provide insight into the success of intervention programs.