

Uncomposed, edited manuscript published online ahead of print.

This published ahead-of-print manuscript is not the final version of this article, but it may be cited and shared publicly.

Author: Periyakoil Vyjeyanthi S. MD; Chaudron Linda MD, MS; Hill Emorcia V. PhD; Pellegrini Vincent MD; Neri Eric MS; Kraemer Helena C. PhD

Title: Common Types of Gender-Based Microaggressions in Medicine

DOI: 10.1097/ACM.00000000003057

Academic Medicine

DOI: 10.1097/ACM.000000000003057

Common Types of Gender-Based Microaggressions in Medicine

Vyjeyanthi S. Periyakoil, MD, Linda Chaudron, MD, MS, Emorcia V. Hill, PhD, Vincent

Pellegrini, MD, Eric Neri, MS, and Helena C. Kraemer, PhD

V.S. Periyakoil is associate professor of medicine, director, Stanford Aging and Ethnogeriatrics Center, and director, Palliative Care Education and Training, Department of Medicine, Stanford University School of Medicine, Stanford, California.

L. Chaudron is professor of psychiatry, pediatrics, and OB/GYN, and associate vice president and senior associate dean for inclusion and culture development, University of Rochester Medical Center, Rochester, New York,

E.V. Hill is director of research and evaluation, Converge, Office for Diversity Inclusion and Community Partnership, Harvard Medical School, Boston, Massachusetts.

V. Pellegrini is professor of orthopedics and physical medicine, Medical University of South Carolina, Charleston, South Carolina.

E. Neri is research data analyst, Center on Stress and Health, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California.

H.C. Kraemer is emerita professor of biostatistics in psychiatry, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California.

Correspondence should be addressed to Vyjeyanthi S. Periyakoil, Stanford University School of

Medicine, 1701 Page Mill Rd, 2nd Floor Room 222, Palo Alto, CA 94304; email:

periyakoil@stanford.edu; Twitter: @palliator.

[footnote] *The videos used in this project and some of the verbatim comments from the study participants are available to individuals through the Project Respect portal

(https://respect.stanford.edu) and through an app called "Stanford Project Respect" available in

the Apple App Store.

Funding/Support: None reported.

Other disclosures: None reported.

Ethical approval: This study was reviewed and approved by the Stanford University institutional review board on May 12, 2015 and subsequently by the institutional review boards at the University of Rochester School of Medicine, Harvard Medical School, and the Medical University of South Carolina.

Previous presentations: Presented by Vyjeyanthi S. Periyakoil as an opening plenary at the Association of American Medical Colleges Council of Faculty and Academic Societies Spring Meeting, April 2019, in Atlanta, Georgia.

Abstract

Purpose

Microaggressions are subtle verbal or nonverbal everyday behaviors that arise from unconscious bias, covert prejudice, or hostility. They may contribute to the persistent disparities faced by women in medicine. In this study, the authors sought to identify common microaggressions experienced by women faculty in medicine and to determine if specific demographic characteristics affect the reported frequencies of these microaggressions.

Method

The authors used chain referral sampling to collect real-life anecdotes about microaggressions from women faculty across the nation. Thirty-four unique experiences from those reported were identified and scripted then reenacted using professional actors to create 34 videos of the real-life microaggressions and 34 corresponding fictional "control" versions of the same situations. The videos, presented in a random order, were evaluated by faculty from 4 academic medical centers from 2016-2018.

Results

A total of 124 faculty (79 women, 45 men) participated. Women reported higher frequencies of microaggressions than men in 33 of the 34 videos depicting microaggressions (*P* value range: < .001 to .042, area under the curve [AUC] range: 0.60 to 0.69). No such differences were seen with the control videos. Women identified 21 microaggressions as occurring frequently. No significant differences were found with respect to participants' age, race/ethnicity, academic rank, or years in medicine. Post hoc analyses showed that the microaggressions fell into 6 themes: encountering sexism, encountering pregnancy and child care related bias, having

abilities underestimated, encountering sexually inappropriate comments, being relegated to mundane tasks, and feeling excluded/marginalized.

Conclusions

Privilege is often invisible to those who have it, whereas bias and discrimination are readily apparent to those who experience it. Knowledge of common microaggressions will allow for targeted individual, interpersonal, and institutional solutions to mitigate disparities in medicine.

Disparities between women and men in medicine persist despite efforts to ameliorate them.¹⁻³ While this could be due to concerted efforts to oppose change, it also could be due to subtle behaviors that have not been previously recognized. Data from the Association of American Medical Colleges (AAMC)¹ show that women constitute 43% of assistant, 33% of associate, and 20% of full professors compared to 57%, 67%, and 80% respectively for men. These differences in rank are not explained by gender differences in productivity or attrition from the workforce.⁴ Wage (salary and bonuses) disparities between men and women have been well described, as have differences in resource allocation, such as space allocation and other professional incentives.^{5,6} Even of those in leadership positions, women are more likely to serve as clerkship, residency, or fellowship directors or in other educational roles⁷; while men are more likely to serve in positions with more power, including as division chiefs, department chairs, and deans.⁸⁻ ¹³ Within the National Institutes of Health, women investigators are less likely to be awarded research dollars.¹⁴ Studies have shown that these disparities across academic medicine are not due to a lack of women physicians, as medical schools have trained equal numbers of men and women for many years.¹ In addition, the percentages of men and women entering academia are roughly equivalent. It is safe to conclude then that gender disparities exist.¹⁵⁻²¹ In a national survey, women faculty expressed a need for an equitable workplace that promotes collegiality, collaboration, and is free of discrimination.²¹ In an effort to ameliorate perceived discrimination, policies and behaviors have been targeted. As a result, written or outright verbal expressions of gender preference are uncommon. However, disparities persist and now may be caused by known prejudices and hostilities that have become more subtle or by previously unrecognized factors. Subtle prejudices and unconscious biases can manifest as microaggressions that may contribute to the persistent disparities faced by women in medicine.

Microaggressions are subtle verbal or nonverbal behaviors that may arise from unconscious biases, covert prejudice, or hostility.²² In contrast to direct aggressions, microaggressions are fleeting, everyday occurrences that may be unconscious, unintentional, or unnoticed by the aggressor, and they are typically unacknowledged when they happen. On the surface, these everyday occurrences may appear innocuous and insignificant, particularly to someone who is not marginalized. However, to someone who is from a marginalized group, microaggressions are known to have a powerful effect on the psychological well-being of the recipient. Cumulatively and over time, microaggressions can contribute to a pervasive state of discrimination and disenfranchisement. In fact, the minority stress theory posits that difficult social situations, like those caused by microaggressions, cause stress for members of minority groups that accumulates over time.²³⁻²⁶ This kind of stress is known to result in perceived discrimination,²⁴ decreased performance, heightened stress responses, erosion of the recipients' sense of confidence and well-being,^{27,28} and long-term health deficits.²⁷ Unconscious biases might well be a missing link that helps explain the gender differences and discriminatory practices in medicine today,^{22,29} and the presence of microaggressions might help explain the erosion of wellness in women and minorities specifically.

Microaggressions, bias, and discrimination can happen to anyone in any venue irrespective of gender, race, and ethnicity. For the purposes of this article, however, we limited our work to the microaggressions reported by women in medicine. We specifically sought to identify common microaggressions reported by women faculty in medicine and to determine if specific demographic characteristics affect the reported frequencies of such behaviors.

Method

Video vignettes

We used a chain referral sampling approach (i.e., a nonprobability sampling technique where existing study participants recruit future participants from among their acquaintances) to confidentially collect real-life narratives related to microaggressions that women faculty in medicine experienced or witnessed in their professional environment. One of the investigators (V.S.P.) invited women through her peer network to initiate the chain referral sampling. Of the numerous real-life microaggressions that participants reported, 34 unique experiences were identified and used to create representative scripts. For each of these 34 real-life microaggression scenarios ("treatment"), a corresponding fictional "control" version of the same scene was scripted. The control scenes depicted the same scenarios as the treatment scenes but without the specific microaggressions. Using professional actors, the scripts were enacted to create 34 pairs of microaggression and corresponding control videos (68 videos in total). All videos were scripted, directed, and produced by one of the investigators (V.S.P.). Next, the 68 videos were assessed by 7 senior faculty leaders (3 men and 4 women), who viewed all the videos and gave feedback on the video pairs. Their input was used to further edit and refine the final videos used in the study.

Study design

We used an online portal, hosted on a secure Stanford University School of Medicine server, to display the videos. The site was programmed to present the 68 videos in a random order to viewers.*

Investigators from each of the 4 study sites (Stanford University School of Medicine, University of Rochester School of Medicine, Harvard Medical School, Medical University of South Carolina) invited their faculty colleagues to participate using the same email invitation (created by V.S.P.). The study sites were specifically chosen to represent both private and public medical schools as well as different geographic locations. Faculty who agreed to participate watched each video and completed an online questionnaire. They were asked to assess each video using the following multiple-choice question:

Based on your own knowledge and experience and that of your colleagues and students at your institution and settings, is this scenario something that:

- (a) Has never happened nor is likely to ever happen
- (b) Happens rarely or will happen rarely
- (c) Happens or will happen to a lot of people
- (d) Affects every person sometime in their career

Participants could not proceed to the next video until they responded to this question for the previous video, and they could not submit their responses unless they answered all the questions. Participants were also invited to write additional comments regarding each video using a free-text feature. As the topic is a sensitive one and to foster frank responses, participants completed the questionnaire anonymously. Data were collected from 2016-2018.

This study was reviewed and approved by the Stanford University institutional review board in 2015 and subsequently by the institutional review boards at the University of Rochester School of Medicine, Harvard Medical School, and the Medical University of South Carolina.

Data analysis

The Mann-Whitney-Wilcoxon test was used to compare the responses of men versus women respondents. For each video, *P* values and effect sizes are reported. Two equivalent effect sizes are reported: area under the receiver operating characteristic curve (AUC) and success rate difference (SRD). AUC is the probability that if a man and woman view the same video clip, the women will report a higher frequency of microaggressions than the men. Thus, if AUC = 0.7, for example, 7 out of 10 times the women will report a higher frequency of microaggressions than the men. The null value of AUC is 0.5, when men and women report equal frequencies of microaggressions. SRD rescales AUC to a null value of zero, which is the probability that a woman reports a higher frequency less the probability that a man reports a higher frequency; SRD = (-1) means than a woman will always report a higher frequency; SRD = (-1) means a man will always report a higher frequency. SRD = 0 means men and women report equal frequencies. Thus, the sign of the SRD clearly shows the direction as well as the magnitude of the male-female difference. The data were analyzed using SAS 9.4 (SAS Institute; Cary, NC).

As part of a post hoc analysis, we identified which microaggressions were most common and grouped them into themes.

Results

A total of 124 faculty members (79 women and 45 men), from diverse racial and ethnic backgrounds, various age groups, and academic ranks, participated in the study (see Table 1 for their complete demographic characteristics). The median time of employment in medicine for both women and men was 15 years.

Women reported much higher frequencies of the microaggressions depicted in 33 of 34 microaggression videos (see Table 2 and Figure 1) than men (*P* value range < .001 to .042 and AUC range 0.60 to 0.69). In stark contrast, men reported these microaggressions to be uncommon. There were no such male-female differences seen in the responses to the control videos.

We compared participants' responses to the videos to determine if other key demographic factors including age, race/ethnicity, academic rank, or number of years in medicine influenced the results, but we found no significant effects.

We identified the most common microaggressions and grouped them into themes. The resulting themes from this post hoc analysis of the 21 microaggressions identified by the women participants, in the order of frequency of occurrence, were (1) encountering sexism (6 videos), (2) encountering pregnancy and child care related bias (5 videos), (3) having abilities underestimated (4 videos), (4) encountering sexually inappropriate comments (3 videos), (5) being relegated to mundane tasks (2 videos), and (6) feeling excluded/marginalized (1 video).

Discussion

Through this study, we identified 21 commonly occurring microaggressions reported by women faculty in medicine. Furthermore, we demonstrated the significant differences between men and women faculty in their perceptions of the prevalence of these microaggressions. It is remarkable that women across the 4 study sites reported a high prevalence of microaggressions, while men from the exact same environments were far less likely to recognize the existence of these microbehaviors.

The ability of all faculty to flourish depends on a nurturing professional environment. Health care settings that are structured to reduce identity-related threats and deliberately promote a sense of safety, belonging, and equity for everyone regardless of their group-based and personal status are critical to empowering women and minorities. Environments that are impartial, consistent with a person's values, and that convey belongingness, engender trust.^{30,31} Microaggressions, over time, may cause the recipients to feel isolated, may undermine trust, and likely will have a lasting negative effect on well-being and morale. They may even cause the recipients to disengage from their work and eventually leave academia. This attrition of women from academic environments will result in a shortage of women role models and mentors and may worsen gender disparities in the future.^{9,32,33}

In addition to the effects on the recipients, microaggressions also have a secondary effect on witnesses, who may draw conclusions about what is institutionally condoned behavior from the behaviors they witness. In fact, it is known³⁴ that a majority group can implicitly stimulate convergent thinking (from the perspective posed by the majority) on what is socially acceptable behavior towards underrepresented groups, and this may be a key reason why microaggressions often go unnoticed and unchecked. Though the recipients of microaggressions (and in many cases the witnesses) often recognize these behaviors immediately, they may feel an internal pressure to conform to the social norms imposed on them, refrain from vocalizing their concerns, and learn to expect and silently tolerate these behaviors. It behooves all professionals, irrespective of their personal characteristics or professional role in the organization, to become aware of microaggressions, identify them when they occur, and actively seek to prevent them.

As of 2017, there were 89,904 medical students in training and 50.7% of them were women.³⁵ Medical schools and teaching hospitals have the solemn responsibility of training future doctors to be respectful and compassionate towards their colleagues, patients, and families. All institutions have some policies that prohibit unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, or other protected characteristics. While these policies may prevent overt expressions of bias, they may not be entirely effective in preventing microbehaviors that manifest from subtle prejudices, including microaggressions. Institutions that allow gender-based and other microaggressions to go unnoticed and unchecked will be less successful in improving the congeniality and collegiality of the professional work climate for all employees, but more specifically for marginalized groups.

The AAMC recommends unconscious bias training for search committees and promotion and tenure committees and the assessment of institutional culture and climate as strategies for institutions to recruit, retain, and advance women in the health care workforce.³⁶ Broad and non-specific unconscious bias training per se may be less likely to result in lasting behavior change. Unconscious bias and subtle prejudice manifest as specific microbehaviors in the workplace. The 6 microaggression themes we identified in this study provide a basis for designing bias prevention training that is specific to the behaviors that faculty encounter in their professional environments and may be useful in designing training that targets real-life experiences. In examining these common themes, we found that microaggressions related to sexist and sexually inappropriate comments and behaviors are interpersonal in nature and require solutions that target individuals who demonstrate these behaviors. Recipients of these types of microaggressions should have a confidential and anonymous way to report these behaviors, and

institutions should adopt a zero-tolerance policy and act expeditiously to stop them from occurring.

Pregnancy and child care related bias can be mitigated by having explicit institutional policies that safeguard the rights of women and by educating all employees about these issues. Solutions to mitigating pregnancy and child care related bias include implementing a parental leave program that allows several weeks to months of paid leave for all new parents, regardless of their gender, and fosters personalized career planning to meet both career and life goals. Doing so while concurrently promoting team success will mitigate work-life and work-work conflicts.^{37,38} Microaggressions that involve underestimating the abilities of women, relegating them to mundane tasks, or excluding them from teams, events, and opportunities can be prevented by instituting specific training, especially for institutional leaders and supervisors. All faculty members also need training³⁹ and coaching to learn how to respond appropriately in real time when they encounter microaggressions, to become effective advocates for their own rights. Passive bystanders should be trained to identify microaggressions and become active upstanders (someone who recognizes when something is wrong and acts to make it right) in providing realtime support to those subjected to microaggressions. This kind of sensitivity training should target the entire workforce, including administrators, deans, chief executives, and members of boards of trustees. Dramatized real-life scenarios, as shown in our videos, might be used to teach these individuals what microaggressions really are. Identifying and eliminating microaggressions are the collective responsibility of everyone in academic medicine, not just those who are the recipients of such behaviors. Ultimately, enduring change is possible only if institutions truly value equity, parity, and a respectful workplace for all and if they build accountability and transparency into the workplace.

13

Copyright © by the Association of American Medical Colleges. Unauthorized reproduction of this article is prohibited.

Our study has a number of limitations. It is a cross-sectional study with volunteer participants. However, the sample size was adequate to detect differences by gender in our findings, as demonstrated by the stark differences between responses to the microaggression videos between men and women. We intentionally included 4 geographically diverse sites and 2 private and 2 public medical schools to increase the diversity of our participants and their settings. In addition, though the women from our chain referral sample did not report any anecdotes of microaggressions perpetrated by other women, we acknowledge that microaggressions towards women can come from both men and women. Future work in this area should focus on understanding the relevance of the scenarios in the videos we created in a broad variety of settings. Another limitation is that we focused only on microaggressions where women were the recipients. To understand the full extent of microaggressions in medicine, we need to collect and study vignettes that include women as the generators of microaggressions and both men and women as the recipients. We also need to identify microaggressions that occur in a variety of venues and settings, including the clinical arena, community-based practices, and elsewhere, as well as those experienced by different groups, including racial and ethnic minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals; persons with disabilities; and other vulnerable groups in medicine.

14

Conclusions

Privilege is often invisible to those who have it, while bias and discrimination are readily apparent to those who experience it. Subtle prejudice and unconscious bias can manifest as microaggressions. In this study, we found that women in medicine, compared to their male counterparts, reported that microaggressions were much more common in the workplace. We identified 6 common types of microaggressions that can be the targets of creative individual, interpersonal, and institutional solutions. Promoting a respectful workplace that prioritizes collegiality and discourages bias will lead to a sense of trust and belonging in all faculty and serve to mitigate disparities in medicine.

References

- The State of Women in Academic Medicine: The Pipeline and Pathways to Leadership, 2015-2016. Washington, DC: Association of American Medical Colleges; 2016. https://www.aamc.org/data-reports/faculty-institutions/data/state-women-academicmedicine-pipeline-and-pathways-leadership-2015-2016. Accessed October 3, 2019.
- Nickerson KG, Bennett NM, Estes D, Shea S. The status of women at one academic medical center: Breaking through the glass ceiling. JAMA. 1990;264:1813-1817.
- Nonnemaker L. Women physicians in academic medicine: New insights from cohort studies. N Engl J Med. 2000;342:399-405.
- 4. Tesch BJ, Wood HM, Helwig AL, Nattinger AB. Promotion of women physicians in academic medicine: Glass ceiling or sticky floor? JAMA. 1995;273:1022-1025.
- Wallis LA, Gilder H, Thaler H. Advancement of men and women in medical academia: A pilot study. JAMA. 1981;246:2350-2353.
- Sege R, Nykiel-Bub L, Selk S. Sex differences in institutional support for junior biomedical researchers. JAMA. 2015;314:1175-1177.
- Kaplan SH, Sullivan LM, Dukes KA, Phillips CF, Kelch RP, Schaller JG. Sex differences in academic advancement: Results of a national study of pediatricians. N Engl J Med. 1996;335:1282-1289.
- 8. Blumenthal DM, Olenski AR, Yeh RW, et al. Sex differences in faculty rank among academic cardiologists in the United States. Circulation. 2017;135:506-517.
- Jena AB, Khullar D, Ho O, Olenski AR, Blumenthal DM. Sex differences in academic rank in US medical schools in 2014. JAMA. 2015;314:1149-1158

- Reed DA, Enders F, Lindor R, McClees M, Lindor KD. Gender differences in academic productivity and leadership appointments of physicians throughout academic careers. Acad Med. 2011;86:43-47.
- 11. Jagsi R, Griffith KA, Stewart A, Sambuco D, DeCastro R, Ubel PA. Gender differences in the salaries of physician researchers. JAMA. 2012;307:2410-2417.
- Jagsi R, Griffith KA, Stewart A, Sambuco D, DeCastro R, Ubel PA. Gender differences in salary in a recent cohort of early-career physician-researchers. Acad Med. 2013;88:1689-1699.
- 13. Carnes M, Bartels CM, Kaatz A, Kolehmainen C. Why is John more likely to become department chair than Jennifer? Trans Am Clin Climatol Assoc. 2015;126:197-214.
- 14. Carnes M, Bland C. Viewpoint: A challenge to academic health centers and the National Institutes of Health to prevent unintended gender bias in the selection of clinical and translational science award leaders. Acad Med. 2007;82:202-206.
- Nattinger AB. Promoting the career development of women in academic medicine. Arch Intern Med. 2007;167:323-324.
- 16. Hopkins N, Bailyn L, Gibson L, Hammonds E. Reports of the Committees on the Status of Women Faculty. Cambridge, Massachusetts: Massachusetts Institute of Technology; 2002. http://facultygovernance.mit.edu/sites/default/files/reports/2002-

03_Status_of_Women_Faculty-All_Reports.pdf. Accessed October 3, 2019.

17. A Study on the Status of Women Faculty in Science at MIT. Cambridge, Massachusetts: Massachusetts Institute of Technology; 1999. http://web.mit.edu/fnl/women/women.html. Accessed October 3, 2019.

- 18. Carr PL, Raj A, Kaplan SE, Terrin N, Breeze JL, et al. Gender differences in academic medicine: Retention, rank, and leadership comparisons from the national faculty survey. Acad Med. 2018;93:1694-1699.
- 19. White FS, McDade S, Yamagata H, Morahan PS. Gender-related differences in the pathway to and characteristics of U.S. medical school deanships. Acad Med. 2012;87:1015-1023.
- 20. Mayer AP, Files JA, Ko MG, et al. Academic advancement of women in medicine: Do socialized gender differences have a role in mentoring. Mayo Clin Proc.2008;83:204-207.
- 21. Lautenberger DM, Dandar VM, Raezer CL, Sloane RA. The State of Women in Academic Medicine: The Pipeline and Pathways to Leadership, 2013-2014. Washington, DC: Association of American Medical Colleges; 2014. https://store.aamc.org/downloadable/download/sample/sample_id/228/. Accessed October 3, 2019.
- 22. Paludi MA. Managing Diversity in Today's Workplace: Strategies for Employees and Employers. Santa Barbara, California: Praeger; 2012.
- 23. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychol Bull. 2003;129:674-697.
- 24. Pascoe EA, Richman LS. Perceived discrimination and health: A meta-analytic review. Psychol Bull. 2009;135:531-554.
- 25. Meyer IH. Prejudice and discrimination as social stressors. In: Meyer IH, Northridge ME, eds. The Health of Sexual Minorities. Boston, Massachusetts: Springer; 2007.
- 26. Pavalko EK, Mossakowski KN, Hamilton VJ. Does perceived discrimination affect health? Longitudinal relationships between work discrimination and women's physical and emotional health. J Health Soc Behav. 2003;44:18-33.

- 27. Williams DR, Neighbors HW, Jackson JS. Racial/ethnic discrimination and health: Findings from community studies. Am J Public Health. 2003;93:200-208.
- Paradies Y. A systematic review of empirical research on self-reported racism and health. Int J Epidemiol. 2006;35:888-901.
- Sue DW. Microaggressions in Everyday Life: Race, Gender, and Sexual Orientation.
 Hoboken, New Jersey: Wiley; 2010.
- 30. Buchan N, Croson R, Dawes R. Swift neighbors and persistent strangers: A cross-cultural investigation of trust and reciprocity in social exchange. American Journal of Sociology. 2002;108:168-206.
- 31. Tyler TR. Public trust and confidence in legal authorities: What do majority and minority group members want from the law and legal authorities? Behavioral Science and the Law. 2001;19:215-235.
- 32. Arrizabalaga P, Abellana R, Viñas O, Merino A, Ascaso C. Gender inequalities in the medical profession: Are there still barriers to women physicians in the 21st century? Gac Sanit. 2014;28:363-368.
- 33. Jena AB, Olenski AR, Blumenthal DM. Sex differences in physician salary in US public medical schools. JAMA Intern Med. 2016;176:1294-1304.
- 34. Nemeth CJ. Minority influence theory. In: Van Lange P, Kruglanski A, Higgins T, eds.Handbook of Theories of Social Psychology. New York, New York: Sage; 2009.
- 35. Association of American Medical Colleges. More Women Than Men Enrolled in U.S. Medical Schools in 2017. Press release. December 18, 2017. https://www.aamc.org/newsinsights/press-releases/more-women-men-enrolled-us-medical-schools-2017. Accessed October 14, 2019.

- 36. Corrice A. Unconscious bias in faculty and leadership recruitment: A literature review. Analysis in Brief. 2009;9:1-2. https://www.aamc.org/system/files/reports/1/aibvol9no2.pdf. Accessed October 15, 2019.
- 37. Fassiotto M, Simard C, Sandborg C, Valantine H, Raymond J. An integrated career coaching and time-banking system promoting flexibility, wellness, and success: A pilot program at Stanford University School of Medicine. Acad Med. 2018;93:881-887.
- 38. Dubal V. Addressing the gender gap in medicine head-on. Gender News. January 12, 2015. https://gender.stanford.edu/news-publications/gender-news/addressing-gender-gap-medicine-head. Accessed October 3, 2019.
- 39. van Ryn M, Hardeman R, Phelan SM, et al. Medical school experiences associated with change in implicit racial bias among 3,547 students: A medical student CHANGES study report. J Gen Intern Med. 2015;30:1748-1756.

C

[figure legend]

Figure 1 Effect sizes (success rate difference [SRD] and area under the curve [AUC]) comparing women's and men's perceptions of microaggressions in 34 treatment (with microaggressions) and 34 corresponding control (without microaggressions) videos, in order of effect size. Overall, women reported a much higher frequency of microaggressions than men.

Table 1

Demographic Characteristics of 124 Participants in a Study of Common Types of Gender-Based Microaggressions in Medicine, 2016-2018

Characteristic	No. (%)
Gender	
Female	79 (63.7)
Male	45 (36.3)
Age in years	
30-39	22 (17.7)
40-49	35 (28.2)
50-59	35 (28.2)
60-69	26 (21.0)
70-79	4 (3.2)
80 and older	2 (1.6)
Academic rank	
Full professor	41 (33.1)
Associate professor	46 (37.1)
Assistant professor	30 (24.2)
Instructor	7 (5.6)
Race/Ethnicity	
Caucasian	100 (80.7)
Black or African American	5 (4.0)
Hispanic American	6 (4.8)
Asian American	12 (9.7)
Mixed	1 (0.8)

Table 2Comparison of 34 Microaggression (Treatment) Videos and 34 Control Videos in a Study of Common Types of Gender-Based Microaggressions in Medicine, 2016-2018

			Treatment			Control		
	Video							
Video theme	no.	Video description	AUC (95% CI)	SRD (95% CI)	<i>P</i> value	AUC (95% CI)	SRD (95% CI)	P value
Encountering sexually inappropriate comments	13	A department chair discusses the upcoming retreat with faculty members.	0.69 (0.59, 0.78)	0.38 (0.19, 0.56)	.000	0.48 (0.39, 0.58)	-0.03 (-0.23, 0.16)	.739
Encountering sexually inappropriate comments	32	Researchers discuss a study design.	0.68 (0.59, 0.77)	0.36 (0.19, 0.53)	.000	0.59 (0.50, 0.67)	0.18 (0.01, 0.34)	.049
Pregnancy and child care related bias	18	A search committee discusses a female candidate for a faculty position.	0.67 (0.58, 0.77)	0.35 (0.15, 0.53)	.000	0.41 (0.32, 0.50)	-0.18 (-0.36, -0.01)	.056
Relegated to mundane tasks	6	A chair assigns a task in a meeting.	0.66 (0.57, 0.75)	0.33 (0.15, 0.50)	.001	0.43 (0.34, 0.52)	-0.15 (-0.32, 0.04)	.124
Abilities underestimated	25	Two faculty members discuss the success of a female colleague.	0.66 (0.56, 0.75)	0.31 (0.13, 0.49)	.002	0.45 (0.35, 0.54)	-0.11 (-0.30, 0.08)	.273
Encountering sexism	8	The appointment and promotion committee reviews a female professor's file and a male committee member expresses doubt that she will be a successful faculty member.	0.65 (0.56, 0.75)	0.31 (0.11, 0.50)	.003	0.53 (0.43, 0.63)	0.06 (-0.14, 0.27)	.520
Abilities underestimated	14	A woman brings up an idea at a meeting, but it is ignored. A man mentions the same idea and is acknowledged.	0.65 (0.56, 0.73)	0.30 (0.12, 0.46)	.001	0.50 (0.42, 0.59)	0.00 (-0.17, 0.18)	.979
Encountering sexism	23	A man explains why he was late to the meeting when the team leader responds by making a sexist remark.	0.65 (0.55, 0.74)	0.30 (0.10, 0.47)	.003	0.51 (0.41, 0.61)	0.02 (-0.18, 0.23)	.828
Abilities underestimated	29	A senior faculty member introduces the new chair and vice chair for the honor society when a faculty member makes an assumption.	0.64 (0.55, 0.73)	0.29 (0.10, 0.46)	.003	0.53 (0.43, 0.62)	0.06 (-0.13, 0.24)	.516
Encountering sexism	27	In a research meeting, a female researcher forgets to complete the appropriate analyses and a male colleague makes a remark.	0.64 (0.54, 0.73)	0.28 (0.07, 0.45)	.004	0.60 (0.50, 0.70)	0.20 (0.00, 0.40)	.038
Relegated to mundane tasks	31	A team leader assigns a mundane task.	0.64 (0.54, 0.73)	0.27 (0.07, 0.46)	.008	0.50 (0.41, 0.58)	-0.01 (-0.18, 0.16)	.921
Encountering sexism	33	A man makes a remark to his female colleague about her work.	0.63 (0.54, 0.72)	0.26 (0.08, 0.44)	.008	0.63 (0.53, 0.72)	0.25 (0.06, 0.45)	.008

Copyright © by the Association of American Medical Colleges. Unauthorized reproduction of this article is prohibited.

Feeling excluded, marginalized	2	Male colleagues fail to invite a new colleague into the conversation.	0.63 (0.54, 0.72)	0.26 (0.07, 0.44)	.008	0.46 (0.36, 0.55)	-0.08 (-0.27, 0.11)	.412		
Pregnancy and child care related bias	22	Interviewers make a remark to a female interviewee.	0.63 (0.53, 0.72)	0.26 (0.06, 0.44)	.009	0.46 (0.37, 0.54)	-0.09 (-0.27, 0.08)	.372		
Abilities underestimated	10	During a research presentation, supervisors make a remark to the presenter.	0.63 (0.54, 0.72)	0.26 (0.07, 0.45)	.011	0.40 (0.31, 0.48)	-0.21 (-0.37, -0.03)	.040		
Encountering sexually inappropriate comments	26	A woman states that she has not completed a research task and a male colleague makes a remark.	0.63 (0.53, 0.72)	0.25 (0.06, 0.44)	.011	0.53 (0.43, 0.63)	0.06 (-0.13, 0.25)	.543		
Pregnancy and child care related bias	12	A search committee member discusses a female candidate's situation.	0.62 (0.53, 0.71)	0.23 (0.05, 0.41)	.022	0.51 (0.42, 0.61)	0.03 (-0.16, 0.22)	.790		
Encountering sexism	11	An appointment and promotions committee discusses a female faculty candidate.	0.62 (0.52, 0.71)	0.23 (0.04, 0.42)	.021	0.45 (0.37, 0.53)	-0.10 (-0.26, 0.06)	.288		
Encountering sexism	28	Two men discuss a new office assistant.	0.61 (0.53, 0.71)	0.23 (0.05, 0.42)	.025	0.52 (0.43, 0.63)	0.05 (-0.14, 0.26)	.623		
Pregnancy and child care related bias	34	A team is planning a department holiday party.	0.61 (0.51, 0.69)	0.21 (0.02, 0.39)	.028	0.48 (0.39, 0.58)	-0.05 (-0.23, 0.15)	.610		
Pregnancy and child care related bias	21	A female faculty member informs her boss about her pregnancy.	0.60 (0.50, 0.71)	0.20 (0.00, 0.41)	.042	0.51 (0.43, 0.58)	0.01 (-0.14, 0.17)	.899		
Feeling excluded, marginalized	3	Faculty members make dinner plans.	0.59 (0.49, 0.69)	0.19 (-0.01, 0.38)	.068	0.48 (0.39, 0.58)	-0.03 (-0.23, 0.15)	.736		
Pregnancy and child care related bias	19	A division chief responds to a female faculty member's request to be considered for a promotion.	0.59 (0.48, 0.68)	0.17 (-0.04, 0.37)	.089	0.48 (0.38, 0.57)	-0.04 (-0.23, 0.14)	.671		
Abilities underestimated	7	A female faculty member suggests a new idea for a subcommittee, and the leadership role is given to a man.	0.58 (0.49, 0.67)	0.16 (-0.03, 0.35)	.100	0.53 (0.44, 0.63)	0.05 (-0.13, 0.25)	.586		
Pregnancy and child care related bias	24	A female faculty member tells the boss about her pregnancy.	0.58 (0.47, 0.68)	0.15 (-0.05, 0.35)	.136	0.46 (0.36, 0.55)	-0.09 (-0.28, 0.10)	.364		
Feeling excluded, marginalized	15	A female faculty member is with a group of men engaged in a sports conversation.	0.57 (0.47, 0.68)	0.15 (-0.07, 0.35)	.139	0.50 (0.40, 0.59)	-0.01 (-0.20, 0.19)	.949		
Pregnancy and child care related bias	30	A male faculty member makes a remark to a woman who has returned from maternity leave.	0.57 (0.47, 0.66)	0.13 (-0.05, 0.32)	.175	0.40 (0.30, 0.50)	-0.19 (-0.39, -0.01)	.052		
Encountering sexism	4	In a faculty meeting, the chair makes a sexist remark.	0.57 (0.46, 0.66)	0.13 (-0.07, 0.31)	.195	0.41 (0.32, 0.50)	-0.18 (-0.35, -0.00)	.064		

24

Copyright © by the Association of American Medical Colleges. Unauthorized reproduction of this article is prohibited.

Encountering sexism	5	In a team meeting, the chair makes a microaggressive remark.	0.56 (0.45, 0.65)	0.11 (-0.09, 0.29)	.264	0.46 (0.38, 0.56)	-0.08 (-0.25, 0.12)	.421
Encountering sexism	16	After a meeting, the men plan a get-together that does not include women faculty.	0.55 (0.45, 0.66)	0.11 (-0.10, 0.31)	.286	0.60 (0.50, 0.70)	0.21 (0.00, 0.40)	.037
Encountering sexism	9	An appointment and promotion committee reviews a female faculty candidate.	0.55 (0.45, 0.64)	0.10 (-0.09, 0.28)	.281	0.51 (0.43, 0.59)	0.02 (-0.15, 0.19)	.843
Pregnancy and child care related bias	17	A supervisor responds to a pregnant female faculty member's request for time off.	0.54 (0.45, 0.63)	0.08 (-0.10, 0.25)	.324	0.40 (0.32, 0.49)	-0.20 (-0.37, -0.02)	.033
Pregnancy and child care related bias	20	A female faculty member returning from maternity leave discusses her job with her supervisor.	0.54 (0.44, 0.63)	0.08 (-0.12, 0.27)	.435	0.44 (0.35, 0.53)	-0.13 (-0.30, 0.05)	.190
Encountering sexism	1	A newly recruited junior female faculty member is allotted a small shared office.	0.47 (0.37, 0.55)	-0.07 (-0.25, 0.11)	.484	0.51 (0.42, 0.61)	0.03 (-0.16, 0.21)	.789

Abbreviations: AUC indicates area under the curve; SRD, success rate difference; CI, confidence interval.

^aThis table shows the microaggression (treatment) and control video pairs, sorted by effect size of the treatment video. *P* values were calculated using the Mann-Whitney-Wilcoxon test. Effect size measures were AUC and SRD. This table reports both SRD' (reverse sign of SRD) and AUC' as (1-AUC). SRD = (+1) means than a woman will always report a higher frequency; SRD = (-1) means a man will always report a higher frequency. SRD = 0 means men and women will report equal frequencies. Themes listed were identified post hoc.

Copyright © by the Association of American Medical Colleges. Unauthorized reproduction of this article is prohibited.

Figure 1



Figure 2

