Women Are Less Likely Than Men to Be Full Professors in Cardiology
Why Does This Happen and How Can We Fix It?

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EDITORIAL

Academic cardiology exists within a broader culture where stereotypic assumptions about men and women are pervasive. Even if not consciously endorsed, these cultural stereotypes impede the entry, persistence, and advancement of women in academic cardiology. Often outside of conscious awareness, stereotypes can shape the decisions of those who determine who to admit, hire, promote, fund, and mentor in academic cardiology, and also influence individual cardiologists as they decide whether they “fit” in interventional or noninvasive cardiology, in research or clinical practice, or into the top leadership strata of academic cardiology. After adjusting for age, clinical experience, cardiology subspecialty, and multiple measures of research and clinical productivity, Blumenthal and colleagues,1 in this issue of Circulation, found the odds of being a full professor were 37% lower among female than male US academic cardiologists. Given that women comprise nearly half of medical school matriculates, in the face of the current and projected cardiology workforce shortage, with more than half of current cardiologists >55 years of age, identifying barriers for women’s career advancement in academic cardiology is critical to attract women to the cardiology workforce.

GENDER AND ASSUMPTIONS ABOUT LEADERSHIP AND STATUS

Regardless of one’s personal beliefs, simply knowing a group stereotype serves as a perceptual filter in evaluating information about a group member. Prevailing male-gendered stereotypes include “agentic” traits and behaviors (eg, assertive, independent, and technically skilled), whereas female-gendered stereotypes include “communal” traits and behaviors (eg, submissive, dependent, and relational). Stereotypic assumptions of leaders overlap to a far greater extent with male than female stereotypes, creating a congruity for men but not women with leadership roles. This tenacious mental model of leaders as men persists despite decades of disconfirming research showing no difference in the effectiveness of male and female leaders and the importance of both agentic and communal behaviors in the most effective leaders.2

Men benefit from a similar congruity with other high status roles because in our culture, men and male-gendered roles are imbued with higher status and prestige than women and female-gendered roles.

This role congruity likely contributes to the overrepresentation of female physicians in relatively low-status and lower remunerated “communal” specialties, such as pediatrics and family medicine, and the overrepresentation of male physicians in high-status, highly remunerated “agentic” fields, such as orthopedics and neurosurgery. Isaac et al3 found evidence of such subtle socialization of male and female medical students toward gender-congruent specialties in a text analysis of Medical Student Performance Evaluations. Within cardiology, such “gender tracking” may
contribute to the persistent underrepresented of women in the highly remunerated, highly technical agentic areas of interventional and electrophysiology cardiology subspecialties, compared with the greater representation of women in the more communal general and noninvasive areas of cardiology. The conflation of gender and status may also help explain the consistent finding of lower salaries among female than male physicians in nearly all specialties, including cardiology.

Trivial amounts of information (eg, the male or female name or picture on an application) bring unbidden the stereotype to mind. Once activated, these stereotypes disadvantage women being evaluated for or in top leadership/high-status/technical roles. Information that may strongly trigger female-gendered assumptions, such as motherhood, attractiveness, perfume, or feminine attire, can further disadvantage women, just as being tall implicitly advantages men in their rise toward leadership. Women also learn from an early age that they cannot simply “act like a man” to succeed in male-gendered roles. Social reprisals invariably follow behaviors that stray from female gender norms with admonishments not to be bossy, not to brag, and to be nice. This internalized “fear of backlash” was expressed by the female residents in describing their experiences leading cardiopulmonary resuscitative events.

**Small Advantages Are Cumulative**

In her book, Why So Slow?, Virginia Valian discusses the cumulative benefits to a career of small advantages at each step. Martell confirmed this notion in a computer simulation of a fictional organization. The beginning of the simulation features 50% men and women at each of 8 levels, with 500 incumbents at the bottom level and 10 at the top. Each employee is assigned a performance evaluation score, and the 15% with the highest scores are promoted to the next level until the organization is staffed entirely with “new” employees. When men are given a 1% bias in their favor, the percentage of women and men at the top changes from 50% each to 35% and 65%, respectively. A 5% positive bias favoring men reduces the percentage of women at the top from 50% to 29%. The selection, persistence, and advancement of physicians in academic cardiology parallel this simulation. From near parity in medical school, women fall to 43% of internal medicine residents, 22% of cardiology fellows, 20% of assistant professors in cardiology, and 9% of full professors in cardiology. Gender differences in social roles outside the workplace often dominate discussion as contributors to disparate career outcomes for male and female physicians, but these do not account for the positive bias for men observed in hiring, the review of National Institutes of Health grants, selection of leaders for large research centers, publication in prestigious medical journals, and willingness to provide scientific mentorship.

**Well-Intended Institutional Messages Can Exacerbate Gender Bias**

Blumenthal et al found considerable institutional variation in the gap between female and male cardiology professors. Relevant to this observation is research on institution culture and gender bias in personnel decision making. For example, Castilla and Bernard found when a company’s core value statements emphasized a commitment to meritocracy in performance rewards, compared with a company with merely descriptive statements about performance reviews, participants gave female employees lower bonuses than identically performing male employees. Kiser et al similarly found that participants condoned blatant hiring and salary discrimination against women in a company with a diversity statement confirming its commitment to gender equity compared with one with a mission statement that lacked such wording. In other studies, priming people to believe they are objective or nonsexist increased their bias toward women in hiring for high-status positions. External primes for objectivity, such as wearing a white coat, carrying a stethoscope, or using honorific titles, could foster gender bias—however unintentionally or unwittingly—in judgments about equally performing men and women that would advantage men. Blumenthal et al found that infectious disease was the only other medical subspecialty with significantly lower odds of female than male full professors. If the gender gaps in cardiology and infectious disease occur at the same institutions, then it might be fruitful to examine their institutional messaging and practices that might prime objectivity.

**Translating Research Into Practice**

Fortunately for academic cardiology, the body of research on effective strategies to mitigate the unwanted effects of gender stereotypes is growing. The importance of accumulated advantage should encourage institutions to examine annual performance-reward systems. The success of Castillo's work with a large service-sector company is noteworthy and could be extrapolated to academic medicine.

In this company, women were receiving lower annual performance rewards than comparably performing men. This difference was eliminated by the following 2 interventions. The first was implementation of process accountability in the form of a committee that reviewed managers’ performance-reward decisions and their justification. The committee had the ability to make adjustments. The second was outcome transparency, in which all members of the organization could see the performance-reward decisions and rationale and received training in the new system. A staff person was hired to coordinate the effort. The words and descriptors we use can reinforce and transmit gender stereotypes. Abstract words that trigger a male gender stereotype will favor male appli-
cants. Institutions should examine the language used in hiring and performance-reward practices. For example, rather than indicating that an institution is searching for “a strong, charismatic leader,” specific information such as “a physician-scientist who has led a federally funded research program for over 10 years and participated in the profession at a national level” would reduce reinforcement of implicit male leader role congruity.

Ensuring that hiring and promotion committees commit to the value of credentials before evaluating individual applicants may also reduce gender bias.\(^3\) External confer-ral of status, such as ending professorships for women leaders, may help counteract the implicit assumption that women are of lower status than comparable men.\(^1\)\(^5\)

Finally, approaching gender bias as a potentially re-medi able habit appears to be effective. Mobilizing stra-t egies from health behavioral change, Carnes et al.\(^6\) conducted a cluster randomized trial of a gender bias habit reducing intervention at 1 institution. Compared with faculty in the 46 control departments, those in the 46 departments allocated to a 2.5-hour interactive workshop showed significant increases in personal bias awareness, motivation, self-efficacy and self-reported action to promote gender equity. They also reported a more positive department climate.

We applaud Blumenthal et al.\(^1\) for conducting this meth-odologically sound and compelling study that clearly out-lines the disparity that women face in academic cardiology. Their research should stimulate additional data gathering and implementation studies with the goal of ensuring that academic cardiology has the ability to foster the career of each individual cardiologist—regardless of their gender—to their full potential to contribute to a vibrant future of research, teaching, and clinical care.

**REFERENCES**


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Circulation. 2017;135:518-520
doi: 10.1161/CIRCULATIONAHA.116.026671
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2017 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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