WHY IS JOHN MORE LIKELY TO BECOME DEPARTMENT CHAIR THAN JENNIFER?

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ABSTRACT

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.

INTRODUCTION

Fifty years after Title IX, women remain sparsely represented in high ranking and leadership positions in academic medicine (1). Although men and women enter the career pipeline at similar rates, academic medicine does not equivalently advance them. Currently, women account for 32% of associate professors, 20% of full professors, 14% of department chairs, and 11% of deans at US medical schools — far from the near gender parity observed among medical students since 1995 (1).

Stereotype-based cognitive bias is one factor that constrains wom-

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en's opportunities for advancement in academic medicine beginning at early career stages (2). Research on prejudice recognizes two forms of bias that could contribute to this, both of which emerge from culturally reinforced group stereotypes. The first type of gender bias is overt and related to explicitly endorsed personal beliefs about women (eg, believing that women in academic medicine are less committed to their careers than men or believing that women make less effective leaders than men). The second type of gender bias — so called implicit bias — is more elusive because one is typically unaware that it is operating and it may be at odds with one's personal beliefs even while it is influencing judgment and actions (3,4). Explicit gender bias in academic medicine has decreased remarkably in the United States since the passage of the Education Amendment to the Civil Rights Act (Title IX) during the past half century. As a result, large numbers of women have entered the medical field and made substantial contributions (5). However, because widely shared cultural stereotypes about men and women remain (6), implicit biases persist with little change (7). Cultural stereotypes continue to characterize women as "communal" (eg, kind, dependent, nurturing) and deficient in "agentic" traits (eg, logical, independent, strong) that stereotypically characterize men (8). More than 30 years of research confirms that these stereotypes operate to disadvantage women in agentic domains such as science, medicine, and leadership in which the assumption is that women with their communal traits will be less competent and less likely to succeed than men who are characterized by agentic traits (9–14). The implicit expectation of lower competence becomes self-fulfilling as confirmed in the multiple experimental studies which show that identical work is consistently rated lower when evaluators — both male and female — believe it has been performed by a woman; and raters require more proof of women's than men's skills (eg, more publications or awards) to be convinced of their professional competence in agentic domains (2,9,15,16). Assumptions that women lack the agentic traits associated with competence in academic medicine and science can also disadvantage them in less formal ways, such as in day-to-day social interactions in their departments (17). Consequently, women may experience greater feelings of isolation, feel that their work is less valued, and receive fewer nominations for leadership positions or other career-advancing opportunities (2,17–22). Our research has focused on how stereotype-based assumptions may subtly yet adversely affect women's experiences and how multilevel interventions are needed to ensure that men and women enjoy the same opportunities for participation and advancement in academic medicine, science, and engineering

(17,23–25). Here we present some of our research on the influence of gender stereotypes at early career stages in academic medicine by examining the written evaluations of medical students and the leadership experiences of medical residents. Approaching gender bias as a remediable habit, we also describe the first cluster randomized controlled study of a gender bias reducing intervention directed at faculty.

MEDICAL STUDENTS MAY BE SOCIALIZED TOWARD SPECIALTIES THAT ALIGN WITH GENDER STEREOTYPES

The perception of whether communal or agentic traits and behaviors are required for success in a particular occupation correlates with the percent of men and women in that field (15, 26). This creates a self-fulfilling mental model of male and female gender-typed occupations. Because science, medicine, and leadership are assumed to require agentic traits, men (assumed to be agentic) more easily than women (assumed to be communal) are guided toward and selected for these male gender-typed occupations. In our society, gender is also a powerful status cue: men and anything associated with male-typed agentic traits are imbued with higher status than women and anything associated with female-typed communal traits (27,28). Consequently, agentic occupations in which men predominate, are perceived to have higher status (29,30).

The conflation of gender and status can be observed in fields of medicine where some specialties can be conceptualized as communal because they involve care of families and children and are not viewed as highly technical (Figure 1). Communal specialties generally have

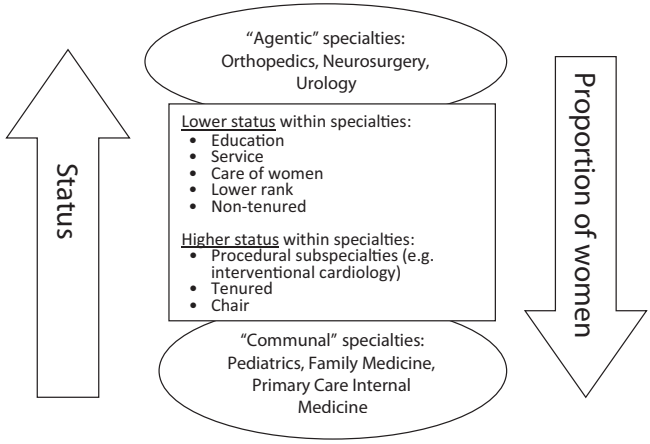


FIG. 1. Conceptual presentation of the alignment of status, the assumption of the need for communal or agentic traits, and the proportion of women in medical specialties.

high proportions of female physicians along with lower status as indicated by relatively lower salaries (31,32). Family medicine, pediatrics, and primary care internal medicine are examples of communal specialties (33). Even within these communal fields, men are more likely than women to occupy higher status agentic roles (eg, tenure, researcher, chair). By comparison, the surgical subspecialties of orthopedics, urology, and neurosurgery are examples of agentic specialties because they are highly technical and predominantly occupied by men. Physicians in these agentic specialties are among the highest paid and afforded high status within institutions (31). Here, again, when women enter these specialties, they tend to occupy lower status communal roles such as educators rather than researchers and providers of clinical care to women (eg, female radiologists become mammographers who are sometimes seen as primary care radiologists and female general surgeons become breast surgeons). Internal medicine has the full spectrum of communal to agentic subspecialties: primary care internal medicine and geriatrics on the communal end with more than 50% women physicians and interventional cardiology on the agentic end with only 8% women and little change in more than a decade (34,35). Status and salary vary accordingly (31).

How is it that medical students sort by gender with women moving toward communal specialties and men toward agentic specialties when there is no evidence of differences in innate competence or skill (36,37)? To gain some insight into this, we performed detailed text analysis of approximately 300 medical student performance evaluations (MSPEs) written for students applying to a competitive diagnostic radiology residency (38). Results showed subtle differences in the text of MSPEs related to the gender of the author and student suggesting that gender stereotypes and their accompanying expectations and assumptions contribute to the gendered socialization of medical students toward different specialties. For example, factor analysis of word categories in MSPEs found that family medicine, a communal specialty, was positively associated with standout adjectives (eg, excellent, exceptional) only in MSPEs written about female students by female authors. By comparison, male authors rarely mentioned family medicine in writing about male students. In text from female authors writing about male students, family medicine negatively correlated with words indicating ability and insight. These results suggest that, however unintentionally, stereotype-based assumptions that women are communal and men are agentic may lead evaluators to see women as a better fit for communal specialties such as family medicine. Close examination of the text supports this as indicated by the surprise when a male student

excelled in family medicine noted by this female author: "[He] really surprised us! [He] is an exceptional student [in family medicine]." The text from another female author appears to express relief that a male student who excelled in the communal setting of family medicine also performed well in the agentic setting of surgery: "Although [he] received highest honors on [his] family medicine rotation, surely [his] finest performance was on surgery. . . [where he] was outstanding — spoke with families, got consent forms signed, was extremely aggressive. . ." It is possible that the absence of "family medicine" in text from male authors writing about male students also results from gender alignment (ie, no mention of this communal specialty in letters from agentic authors for agentic students).

The content of these written evaluations likely indicates that male and female medical students receive a continual barrage of messages which subtly but effectively influence their career directions in ways that allow their ultimate choices for specialties to align comfortably with gender stereotypes. Gender differences in letters of recommendation have also been documented for faculty in medicine (39) and science (40) in ways that could influence their career trajectories (41). We are finding that text analysis of written performance evaluations and critiques holds promise as a way to assess whether gender stereotypes are operating in other evaluation processes in academic medicine that are vital to academic career advancement (42,43).

GENDER NORMS AND THE EXPERIENCE OF LEADERSHIP FOR MEDICAL RESIDENTS

Gender stereotypes are both descriptive and prescriptive (8). That is, stereotypes contain assumptions about what men and women *are* like (eg, men *are* agentic and women *are* communal) — so-called descriptive gender bias; and about how they *should* and *should not* behave (eg, men *should be* agentic and *not* too communal and women *should be* communal and *not* too agentic) — so-called prescriptive gender bias (8,44). If either men or women violate prescribed gender behaviors, they suffer social reprisals (44). For example, men who are too communal may be accused of being "wimpy" or "soft" and women who are too agentic may be accused of being "bossy" or "domineering" (8). Successful job performance in the agentic fields of medicine and science requires women to take on agentic roles (eg, leader, director, independent investigator) that conflict with assumptions about what women are like and how they should behave. As a result, women are susceptible to penalties for displays of job competence, particularly

when they are in leadership roles, in ways that men are not (8,15,45). One meta-analysis of studies examining the evaluation of leaders found that it is only when women adopt an autocratic, stereotypically male type of leadership style that they suffer in evaluation (46). Otherwise, research shows that men and women are equally effective leaders (47,48). In fact, women are more likely than men to lead with a collaborative or transformational leadership style (47,49,50), which is consistently found to be the most effective style of leadership (51).

Residency is the first time during training that new physicians are thrust into a leadership role. We have conducted two studies exploring how gender influences the experience of leadership for male and female internal medicine residents (19,52). The first was a mixed-methods study in which 65 medical residents chose survey responses that indicated varying levels of assertiveness in a series of vignettes describing common resident experiences. In this study, residents ranked major factors they perceived to help and hinder their effectiveness in directing patient care, and indicated how stressful it was to give directive orders in several common settings (52). We found that male residents overall chose the most assertive responses to the vignettes, and female residents were significantly more likely to rank gender as the greatest barrier in directing patient care. Perceived stress when giving directive orders was different according to the year of training (ie, less stress with higher PGY level), but not gender. Sixteen residents were also interviewed with qualitative analysis of the resulting text. In keeping with descriptive gender norms, male residents were described as "authoritative," "confident," and "assertive" whereas female residents were "reflective" and at times "self-conscious." In keeping with prescriptive gender norms, residents observed noticeably less tolerance for directive communication styles for female than male residents as exemplified by the statement of one male resident: "I've seen men able to say things in just terrible tones but it's just accepted; whereas if a woman tried that. . ." Perceiving the need to maintain their behavior within the confines of gender norms, female residents frequently described the need to self-monitor their tone in communicating orders. They also spoke frequently about the importance of working as a team. Taken together the results of this study reveal how gender norms differentially impact male and female medical residents' experience in enacting leadership. Results also suggest that residents' early leadership experiences may encourage female physicians to develop a more collaborative/transformational than autocratic/agentic leadership style to simultaneously mitigate social penalties and be viewed as effective leaders (47,49–51).

In a second qualitative study, we explored how gender influenced medical residents' experience leading cardiopulmonary resuscitation events ("codes"), a setting that demands a directive leadership style (53). All residents interviewed expressed confidence in the equivalent ability of male and female residents to lead codes. However, both male and female residents described the ideal code leader in highly agentic terms (eg, "loud," "authoritative," "controlling the room," "assertive," and "tall") (19). A number of female residents described the need to enact code leadership in this way as stressful, due to fear of violating prescriptive female gender norms. As one resident stated, "The most important thing is that when I ask for things they should not sound like orders." Another female resident said "You aren't sure if people's feelings are going to be hurt or if they are going to be mad about [you giving them orders]." Fear of being perceived as "bossy" was voiced by many female residents but none of the male residents. The female residents interviewed had, however, found effective ways to integrate the conflicting identities of being simultaneously an agentic code leader and a woman. Strategies included giving themselves permission to suspend gender norms during a code, emphasizing the emblems of legitimate authority such as their long white coat or code pager, and adopting a powerful stance (19).

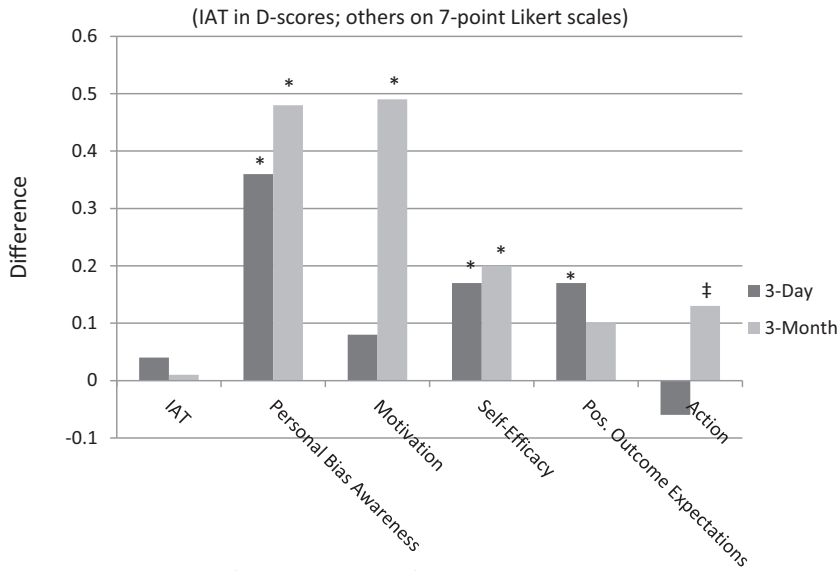
From this work, we concluded that female residents learn to be effective leaders in a variety of clinical situations including running codes. The exigencies of medical residency leave residents with little cognitive or emotional energy to spare. In this context, the additional effort required by female residents to negotiate gendered roles and leadership may disadvantage them at this early stage or their academic careers. These disadvantages, however small, accumulate over the course of a career (54). Residency training programs could help their female residents by acknowledging the existence of bias, based on group stereotypes, including gender, during orientation. They could further include some evidence-based strategies on how to mitigate the negative influence of stereotype-based bias on individual residents (24,55). There is always the concern that acknowledging female residents' membership in a group in which low performance is part of the group stereotype — in this case women and leadership — could lead to their underperformance through the well-described phenomena of stereotype threat (18,56). However, we found no indication that female residents were less effective leaders. Furthermore, most research finds that the negative impact of stereotype threat is dispelled when the phenomenon is described to those vulnerable to its impact and when positive affirmation for performance is provided (18,57–59). In this

case, clear statements should be made to all residents that "research finds no difference in the ability of male and female residents to run codes, lead a health care team, or direct patient care."

GENDER BIAS AS A HABIT THAT CAN BE BROKEN

There is growing evidence that stereotype-based bias functions like a habit as an ingrained pattern of thoughts and behaviors (24,60,61). We approached gender bias in faculty in academic medicine, science, and engineering as a remediable habit. We hypothesized that strategies used to help individuals break other unwanted habits would assist faculty in breaking the gender bias habit (24,60,62,63) and positively influence department climate (61,64–68). Synthesizing research from health behavioral change, adult learning, counseling psychology, and continuing professional development, we developed a 2.5-hour interactive workshop (24). With this workshop as the intervention, we conducted a cluster randomized trial with 92 departments or department-like units across six schools and colleges at the University of Wisconsin − Madison (69). Forty-six departments were allocated to the experimental group and 46 served as wait-list controls. We measured implicit gender/leadership bias with a timed task in which participants sort male and female names with words associated with leader and supporter (70). We also measured awareness of one's personal bias; motivation, self-efficacy, and expected outcomes of regularly engaging in gender equity promoting activities; and self-reported action to promote gender equity. We analyzed the data with mixed linear effects models that examined the differences in faculty in the experimental versus control departments at 3 days and 3 months, compared with their differences at baseline.

Compared with faculty in control departments, those in experimental departments had significant ($P < .05$) increases in awareness, motivation, self-efficacy, and expected positive outcomes for at least one post intervention time point. In a subanalysis that included only departments where at least 25% of the faculty attended, a significant increase in self-reported action to promote gender equity was also observed at 3 months ($P < .01$) (Figure 2). The majority of faculty (men and women) more easily matched male names with leader words and female names with supporter words than the opposite pairing, but this implicit male leadership bias was not significantly different in faculty in experimental or control departments. To determine whether the individual changes in attitudes and behaviors translated into a perceived difference in the department culture, we extracted questions



IAT= Implicit Association Test (standardized D-score)
*P < 0.05; models adjusted for faculty gender and rank
‡P < 0.05 for action at 3 months when comparing only experimental departments with at least 25% workshop attendance

FIG. 2. Differences between experimental and control departments compared with difference at baseline (IAT in D-scores; others on 7-point Likert scales).

from the *Study of Faculty Worklife* (71). This survey was mailed to all faculty members before and after the workshop was developed and implemented. Post-intervention, faculty in experimental departments felt they "fit in" better ($P = .024$); that their colleagues valued their research and scholarship more ($P = .019$); and that they were more comfortable raising personal and family responsibilities in scheduling department obligations ($P = .025$). Results were consistent across male and female faculty, and workshop attendance by the department chair/head had no impact.

We concluded from this study that cognitive behavioral strategies which help individuals break other unwanted habits can be effective in breaking the gender bias habit as well. It is the faculty in academic medicine, science, and engineering that establish and reinforce the customs, attitudes, and norms for behavior — both tacit and explicit. Our results suggest that changing the attitudes and behaviors of a critical number of faculty in a department can translate into a more inclusive and supportive climate for all faculty – both men and women.

SUMMARY

The research presented provides insights into the subtle yet consequential ways gender stereotypes and their accompanying assumptions and expectations can influence socialization of medical students into different medical specialties and impact medical residents' clinical leadership experience. Such stereotypes conspire in multiple ways to impede the full participation and advancement of women at all career stages in academic medicine. The research presented also provides compelling evidence that stereotype-based gender bias functions as an unwanted habit and that providing faculty with cognitive behavioral tools to practice can help them break the bias habit and improve department climate.

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DISCUSSION

Wenzel, Richmond: I couldn't help but think of Lake Wobegon where "all the women are strong and all the men are good looking." In the past, at VCU, I have actually worked

with a very good theater group. I have written about this, where we did a randomized, controlled study trying to get our house staff to relate to patients, because a good actor isn't faking it. What he or she is really doing is actually connecting in the moment in truth to what is going on. Actors know how to do this, and that is what they teach. I am just wondering in order to move this ahead, my hypothesis would be, women particularly, working with actors and learning some role techniques, might be something that would actually help get through this in a more quick way. Obviously I am very slow about this. I loved your paper. Just a thought.

Carnes, Madison: So, if I understand correctly, you are concerned about the stress for women in codes? I think these findings have a lot of recommendations that we could make for training residents. Actually, if we want to translate research into practice, there is a mountain of research from social psychology that would show there are many effective ways of reducing that stress. They wouldn't have to find it every time on their own. If you simply say: "research shows there is no difference in the ability of men or women to perform leadership during codes" — if you just started with that statement — that would probably be the most effective intervention that you could do. Because women are forced to function in what has been a very traditional male environment. So, simply saying research shows there is no difference in your ability to perform in this environment can reduce stress. I mean why aren't we doing that? Why isn't everything prefaced with that? Why isn't every medical school exam? And actually race is the same. If we just said: "research shows there is no difference in the ability of people from any social group to perform in this environment," it would enhance performance of women and underrepresented minorities. We should have it labeled on the walls because there is level evidence to show that that works.

Hochberg, Baltimore: I'm proud to say that I am a communal man, and I have my bracelet to show for it. I have a couple of questions. One of your earlier slides was a histogram where you showed the distribution by gender and academic type. Do you have a similar slide which looks at temporal changes? You pointed out about Title IX in the 1970s and the temporal changes in terms of the proportion of women at different stages. I know from my own experience, 10% of my medical school class at Hopkins was women. I think at University of Maryland now is certainly over 50% and it might be over 60% of the medical students are women. Second question relates to how much of this is a societal issue not limited to the medical profession? When I was a visiting professor in the former Soviet Union in the late mid-1980s, fully all of the physicians who were in leadership positions, as well as most of the trainees with whom I came in contact, were women. This is in rheumatology, and we're blessed by having four women rheumatologists here at this meeting; three of whom are new members.

Carnes, Madison: Well there is a huge conflation of gender and status. I believe in the countries you are talking about actually being a physician is fairly low status. Being party members or something else might be high status, and you will likely see few women. There is a conflation of gender and status such that in our society things that are male, or associated with male, are always of higher status. And things associated with women and activities associated with being female are of lower status. You can look at it in the occupational spectrum. You can look at it everywhere. As I mentioned, you can even look at it in medical subspecialties. Who's paid the most? The specialties that have the most men are. PAs coming out make more than a starting pediatrician, and they are 70% to 80% women now. Assumptions frequently trump data. A lot of times people will say, "Well you know women. It's a long training period to be an orthopedic surgeon, and you know they have to get up at night." And I immediately say, "Well what about Ob/Gyn, which is 80% women? Are they not getting up at night? Are they not surgeons?" So when faced with data, there is nothing about being an orthopedic surgeon that makes

men better orthopedic surgeons than women. But it is very high status, and it is very highly paid. So I am not sure if that actually answers your question. But you have to think about that status conflation. So when you look at a country where being a physician is not high status, you can't really compare it to here. Some of what you see in the drop off of women from medical school to professor could be dilution as you suggest. But, look at pediatrics. Thirty percent of residents in pediatrics were women in 1980 and only 10% of pediatric chairs are women. So no matter how you model it, dilution does not account for it. There is a disproportionate loss of women at every career stage.

Ludmerer, St Louis: Just commenting on Marc's question. It does seem that there might be a societal factor in this within the country, and that societal attitudes toward women play out in medicine as they do in all aspects of work and life in America. That's how I interpret the question. In that sense, I think there are very significant societal influences. This is not a medical influence alone or medical situation alone. I think your point that cultural stereotypes are important and significant and play a role is on target. In complex situations, usually there are multifactorial etiologies to a situation. I would appreciate your view on that in this circumstance. Mainly the fact that success in medicine — if you want to look at the professorship level, endowed chair level, department chair, division chief, dean and so forth — requires the ability and willingness to work beyond a 40-hour week, particularly in research grant applications and publications. A traditional problem that women in medicine and other fields have experienced, of course, is that they have child-rearing responsibilities. Even in dual professional families, it's the woman who has the majority of the child-rearing responsibilities. Hours that are spent with the children, of course are not hours in the lab or producing papers or doing the types of activities that are necessary — not for entry to academic medicine or a medical career — but for progression up the ladder. I appreciate your comment on the importance of that factor.

Carnes, Madison: It is certainly true that men and women have different roles outside of academic medicine or outside of other positions. So it may be that more women choose not to engage in what would be a 50-, 60-, 70-hour work week whether its law, medicine, or whatever. So there are a couple of things to point out there. Women without children face these same kinds of barriers. So children are not the only issue. Also, if you look at cohorts that are self-selected for wanting academic careers — if you look at cohorts of K-award holders — you can't even get a K-award unless you are really committed to wanting a R01 funded career. Right? That is one of the criteria. Research from Michigan has shown that women are less likely to go on for an R01 after a K-award. We are dissecting this now. We have actually got a sample where we've done text analysis of the critiques of K-awards given to male and female applicants — both the unfunded A0 and the funded A1 — and we have done a content analysis of this. It is very interesting. The subtle differences align with gender stereotypes. As you all know, when you are reviewing a K-award, low productivity is a concern for every applicant. Right? But for men it is much more likely for the reviewer to say, "The low productivity was a concern and then there is a justification (ie, however, he was moving labs, he was learning a new technique)." So there is almost a role congruity. He has got to succeed! He is a guy! For the women it says, "Great concern about low productivity. We are concerned she doesn't have what it takes to be an independent investigator." So there is also research showing that if you are working in a counter-stereotypical field — if you are a woman working toward being a leader in academic medicine — you actually respond differently to feedback. This has been shown for race as well. So you could give somebody the same feedback, and it would be much more likely to cause a woman to say, "Well they must be right I really don't have it," and leave academics than it would a man who also is sort of reinforced with his role congruity. Yes, it is multifactorial, but I think we have

to look at how even these subtle things can mount up. So when you are writing your K-award reviews, remember how the recipient may respond to that wording. You know maybe you should just say, "We are concerned about low productivity," and stop there. If the men and women K-award holders are getting this different tone in their review, how is the institution responding to that? The mentors are reading this. The mentors are reading maybe she just doesn't have what it has to be. So I think it is very complex, but the first thing is to understand we are all victims of this. We have been raised in a society with messages that are reinforced over and over again. It doesn't make us bad people that we are unintentionally and unwittingly contributing to the perpetuation of bias in many ways. But we need to be aware of it. If you read Kahneman's Book (*Thinking Fast and Slow*) he talks about System 1 and System 2 thinking. We need to mobilize our System 2 thinking when we are engaged in these kinds of evaluative processes; to think about how we could be contributing to undermining our goal of bringing the best talent forward — the best talent in medicine — and being fair and egalitarian in our judgment and decision making.

Schuster, New York: I was thinking about the comments of the women residents running codes. It reminded me of feelings that I had as a young boy in certain situations wherein I expressed fear or insecurity. Of course being a boy, I was socialized by words like, "man up," "don't be a sissy," "pick up that shotgun and shoot that pheasant," "you will be fine." So I want to go back to this sort of role modeling question. Of course, if we role model women and they behave differently, it won't fix the men reacting to them. But I wonder if there might be real potential there. Basically every agentic man got that way because he was socialized to be that way. And every non-agentic woman got that way because she was socialized to be that way. How [best] to course-correct late in the road but to try to get those pathways organized?

Carnes, Madison: So, I guess there are a couple of aspects to that. Of course women are also socialized to "be modest," "don't brag," "don't be too loud," "don't be the center of attention." Laurie Rudman at Rutgers has done a lot of work on this, and she calls this fear of backlash. So women learn, and you saw it in the women residents, this fear of being bossy — which actually Sheryl Sandberg says we have to take away bossy from women, and instead of calling that little girl on the playground "bossy" we need to say "she has potential to be an executive leader" — but a fear of being bossy in our residents was a big thing. Laurie Rudman actually says it becomes the fear of backlash that women have that actually goes a long way towards perpetuating the existence of these gender norms. So again, I think the first thing is just to acknowledge that they are there. Neutralize their impact by not pretending they are not there, by thinking: "Oh my God we can't talk about gender, we can't talk about race, we can't talk about the assumptions that people have about African-Americans because somehow it's so stigmatizing." We can talk about poop. Well maybe not, the poop speaker withdrew. But we can talk about all kinds of yucky things in medicine. But for some reason, it's too sensitive to talk about the fact that these stereotypes exist. These differences in socialization exist. We have assumptions about groups of people when we do our workshop. Everybody is kind of defensive because nobody wants to feel that finger is pointing at you indicating you are a sexist, you are a racist, you are a homophobe. We like to feel like we are egalitarian. So, we work our way into this in a very neutral way. We start talking about stereotypes that might exist about different disciplines depending on what school or college you are in. In the agricultural school, the soil science people have assumptions about the food science people and certainly surgeons and internists have assumptions about each other in medicine. So, we work our way into gender in a very neutral way and say. "You know when you are meeting a surgeon you may bring assumptions to the table about what that surgeon is going to be like before you even meet them." The same thing happens with

gender, the same thing happens with race. So we really try to get people engaged in this in a very neutral way.

Telen, Chapel Hill: I agree with you, especially about countries like Russia, where being a physician is both very low prestige and very low paid. It's also a bachelor's degree. So 30% to 50% of people who graduate from medical school never practice. It is considered an ideal degree for women; much like home economics was in my parents' generation, as something appropriate to women. They would know how to take care of their kids. Experientially from my own experience I see a lot of women that we lose to academic medicine. Some because they have difficulties progressing, but it is often just personal choice for one reason or another, and there are a lot of reasons. But I just wonder, is the beginning of medical school already too late to give young women a sense that they don't have to abide by some of these stereotypes; they can go beyond them? Or have we lost the battle at that point? Even though they made it to medical school, are they still too constricted by their own views of themselves?

Carnes, Madison: Our assumptions about groups of people often trump data. So you can bring data into this. There is a large body of research on gender and leadership. In a code situation, perhaps agentic leadership works. But overall, there is a large body of research on what kinds of leadership styles work best. Actually, a transformational leader style works best. And some aspects of a transformational leadership style are communal, some are agentic, and some are gender neutral. And a transformational leader is somebody who is able to inspire members of the organization to give that discretionary effort beyond their own self-interest. Well, the research also suggests that women are slightly more likely than men to lead in a transformational leadership style. So, academic medicine is shooting itself in the foot if there is even a small likelihood that women would be more likely to be transformational leaders and we're not encouraging them along the academic pipeline. Early on we could be doing interventions. So Nancy Wayne at UCLA published a paper in Academic Medicine; she taught the reproductive human health class to the medical students in first or second year. When they went into small groups, one of the medical students pointed out to her that they were allowed to pick a leader, and there were men leaders in all the small groups. So the next year she did a randomized trial. To one group she simply said, "As physicians you are going to be leaders. This is an opportunity to let somebody lead who may not have any experience leading." That was the statement. The other group was business as usual, and she just looked to see who was more likely to be a leader. In the first group women were significantly more likely to be chosen as leaders. Previously, the men were more likely to be getting that leadership experience even early on. So, just like with being a medical student, you don't come in learning how to ask people all these embarrassing questions, but we teach you how to do it. If you get leadership experience early on, it probably becomes easier at the end as well. So, I think we as instructors in medical school and residency could be offering women more opportunities to lead.

Blantz, San Diego: I would like to make a comment about the title which really has very little do with running code. For many years — 15 years — I was Helen Ranney's fiscal officer following Gene Braunwald at UCSD. I can tell you she and I had these kinds of discussions a lot. I ran a division of 40 people, half of whom were women. The big difference that wasn't mentioned and need to have a control group; you recruit men and women because of their investigative talents particularly and their clinical talents. But my impression — and certainly Helen's impression — was that many men use that as a vehicle for becoming a department chair or becoming a dean whereas it didn't seem like that was true of most of the women. They were in it because of the love of clinical medicine or love of research. It wasn't a vehicle to get this "master of the human race"–type role.

Carnes, Madison: That is an excellent point. There is a large literature [base] showing that self-promoting women actually invoke moral outrage. It is in such violation of how we assume women should behave. We did a qualitative study interviewing faculty in departments that have women chairs, and it was clear over and over again. Women have to always do things for the good of everyone. So they learned to do it and they want to do it. But if a woman ever tried to advance for self-aggrandizement, she would not make it out the door. She would trigger morale outrage and never make it.