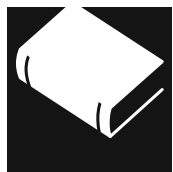


## ORIGINAL RESEARCH



# Gender Differences in Resources and Negotiation Among Highly Motivated Physician-Scientists

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**BACKGROUND:** Resources, including space, equipment, funding, personnel, and protected time, are essential in academic medical careers. Negotiation often plays a key role in the distribution of these resources.

**OBJECTIVE:** This study explored gender differences in resources, negotiation behaviors, and negotiation outcomes in a sample of career development awardees.

**DESIGN:** Postal survey of a cohort of 1,708 clinician-researchers with responses from 1,275 (75 % response rate).

**PARTICIPANTS:** Researchers who received NIH K08 or K23 awards between 2006 and 2009.

**MAIN MEASURES:** We analyzed gender differences in resources, negotiation behaviors, and negotiation outcomes, using regression models adjusted for race, K award type, K award year, degree, academic rank, specialty, and institutional funding.

**KEY RESULTS:** Over one-fifth of respondents reported inadequate access to research space and one-third had asked for increased space or equipment. Perceived adequacy of these physical resources did not differ significantly by gender, but a higher proportion of women reported inadequate access to grants administrators (34.8 %) and statistical support (49.9 %) than men (26.9 %;  $p=0.002$  and 43.4 %;  $p=0.025$ , respectively). Women were more likely to have asked for reduction in clinical hours (24.1 % vs. 19.3 %;  $p=0.02$ ) and to have raised concerns about unfair treatment (50.2 % vs. 38.2 %;  $p<0.001$ ). Overall, 42.9 % of women and 35.9 % of men asked for a raise in the two years preceding the survey ( $p=0.09$ ), and among those who had asked for increased resources, the likelihood that the request was granted did not differ significantly by gender.

**CONCLUSION:** Many career development award recipients report resource needs and negotiate for increased resources. Gender differences in perceived access to research support personnel exist even in this select cohort of K awardees. Institutions should provide appropriate training in negotiation and ensure adequate and equitable distribution of resources to promote academic success.

**KEY WORDS:** resources; negotiation; academic medicine; gender.

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## INTRODUCTION

Academic success does not occur in a vacuum. Resources such as laboratory space, funding, personnel and protected research time are vital components to translating innovative ideas into a productive academic career. Considerable interest exists regarding the career outcomes of women in science and academic medicine, and the resources they have to support their success. In 1999, a committee of female faculty at Massachusetts Institute of Technology (MIT) reported that women were underrepresented in six School of Science departments. Additionally, women whose accomplishments allowed them to rise within the ranks received lower salaries, less laboratory space, less access to financial resources, and fewer institutional awards than their male counterparts.<sup>1</sup> Research suggests that unconscious gender bias might partly explain these disparities. For example, a field experiment demonstrated that both male and female faculty were likely to consider an application assigned a male name more competent, hireable, and worthy of a higher starting salary and more mentorship than an identical application assigned a female name.<sup>2</sup>

Researchers who do not negotiate for the time, funding and other resources needed for a productive academic career will not simply be handed what they need for success.<sup>3</sup> Women are less likely to negotiate in the workplace in order to improve their professional environment,<sup>4</sup> and unconscious bias can lead to disparate perceptions and treatment of women who do negotiate, particularly if they do so in a way that runs contrary to gender stereotypes. Many studies have demonstrated gender differences in negotiating practices.<sup>4-9</sup> Cultural norms instilled in young women from an early age discourage aggressive or self-serving behavior. Additionally, when women display similar negotiating behaviors as men, they are often perceived differently,<sup>10</sup> and the fear of being labeled an “angry woman” may lead to reluctance on the part of women to be direct or firm when negotiating.

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Skill and experience with negotiating are not typically gained through the course of a traditional scientific or medical education.<sup>11</sup> Those without training in negotiation may not reach optimal outcomes because they may fail effectively to communicate goals, needs and wants.<sup>12</sup> A recent qualitative study highlighted the experience of academic medical faculty who were recipients of prestigious career development awards from the National Institutes of Health (NIH), as well as some of their mentors. Themes that emerged included the need for dedicated training in negotiation as well as the role of gender in negotiation.<sup>5</sup>

Published data specifically regarding gender differences in resource allocation and negotiating practices in academic medicine are few. Therefore, in this study, we sought to evaluate gender differences regarding allocation of resources such as space, equipment, funding, personnel and dedicated academic time in a group of highly motivated early-career clinician-scientists who received prestigious mentored career development awards from the NIH. K awards are competitive and prestigious grants that seek to support young investigators as they build independent research careers.<sup>13</sup> Specifically, we considered recipients of K23 awards, which support patient-oriented research, and K08 awards, which support more basic biomedical or behavioral investigation. This constitutes an ideal population within which to explore these issues, as these awards are intended to protect time and provide support for space, equipment, and other resources necessary for their research. We further sought to explore whether, in this population of relatively similarly situated men and women, gender differences exist in negotiation practices or satisfaction with resources.

## METHOD

### Data Collection

Institutional review board (IRB) approval was granted, and the NIH RePORTER (National Institute of Health Research Portfolio Online Reporting Tools) database was used to identify 1,719 recipients of new K08 and K23 awards between 2006 and 2009. We then conducted internet searches and made telephone calls to obtain valid US mailing addresses for 1,708 individuals, to whom we mailed a questionnaire and \$50 incentive. Non-respondents received follow-up mailings.<sup>14</sup> Survey responses were added to data previously collected from RePORTER.

### Measures

The questionnaire has been described previously.<sup>15,16</sup> It included 173 items that assessed demographics, education, time allocation, mentoring experiences, family responsibilities,

career satisfaction and work environment. The questions relating to negotiation experiences were developed after extensive qualitative investigation<sup>5</sup> to define the relevant constructs of interest, followed by detailed cognitive pretesting of the entire instrument.<sup>17</sup>

**Demographic, Educational, and Institutional Characteristics.** We determined through self-report the respondent's age, gender, and specialty. Age was analyzed as a continuous variable and specialty was grouped into five categories (medical, surgical, hospital-based, relating to care of women, children and families or basic sciences), as described previously.<sup>15,16</sup>

**Access to and Satisfaction With Resources.** We asked respondents to rate the adequacy of access to the following resources: (1) Research space; (2) Research equipment; (3) Secretarial support; (4) Grants administrators; (5) Statistical support. Response options were: more than adequate; adequate; some, but inadequate; or none at all.

We asked those with laboratory space to indicate the total square footage. We also sought to measure dissatisfaction with research funding and salary by asking whether respondents were satisfied, using five-point Likert-type scales (grouping responses of "dissatisfied" and "somewhat dissatisfied" versus "neutral," "somewhat satisfied," or "satisfied" for analysis). We further inquired whether respondents would prefer their current time spent on patient care "be decreased", "stay the same" or "be increased".

**Negotiation Behaviors and Outcomes.** We also asked whether, in the past two years, respondents had asked a superior at their institution for any of the following: (1) a reduction in clinical hours; (2) a raise; (3) increased lab equipment or research space; or (4) increased funding for research. Those who indicated they had asked were invited to indicate whether their requests were not granted, partially granted or fully granted.

### Data Analysis

We performed statistical analyses using the SAS system, version 9.2 (Cary, NC). We compared respondents to non-respondents for gender, K award type, K award year, and institution funding level. We tested for significant differences using chi-square or Fisher exact tests for categorical data and two-sample *t*-tests or the Wilcoxon rank-sum test for continuous data. We described the demographic, educational, and institutional characteristics of this sample by gender, as well as their perceived access to resources, self-reported negotiation behaviors, and negotiation outcomes. In addition to describing negotiation behaviors in the overall sample, we examined the proportion who negotiated for additional resources within the subgroup of respondents expressing inadequacy of resources or dissatisfaction. For example, we evaluated the

Table 1. General Characteristics for the Total Analytic Sample (N=1,267)

Characteristic: N (%)	Women	Men	p value
Frequency	582 (45.9)	685 (54.1)	
Age: Mean (SD)	40.0 (4.7)	40.5 (3.9)	0.08
Race			0.59
White	408 (70.6)	478 (70.4)	
Asian	126 (21.8)	158 (23.3)	
Other	44 (7.6)	43 (6.3)	
Missing	4	6	
Marital Status			0.006
Married/Domestic Partnership	508 (87.4)	630 (92.2)	
Single/Never married	57 (9.8)	35 (5.1)	
Divorced/Widowed	16 (2.8)	18 (2.6)	
Missing	1	2	
Children			0.018
Yes	445 (76.6)	560 (82.0)	
No	136 (23.4)	123 (18.0)	
Missing	1	2	
English as primary language			0.065
Yes	498 (85.6)	558 (81.7)	
No	84 (14.4)	125 (18.3)	
Missing	0	2	
K-award type			<0.001
K08	212 (36.4)	412 (60.2)	
K23	370 (63.6)	273 (39.8)	
Year of K award			0.228
2006	124 (21.3)	159 (23.2)	
2007	153 (26.3)	156 (22.8)	
2008	138 (23.7)	188 (27.5)	
2009	167 (28.7)	182 (26.6)	
Research laboratory-based			<0.001
Yes	218 (37.5)	440 (64.2)	
No	364 (62.5)	245 (35.8)	
Institution funding tier			0.48
1st	106 (18.4)	125 (18.5)	
2nd	152 (26.4)	201 (29.7)	
3rd	160 (27.8)	186 (27.5)	
4th	158 (27.4)	164 (24.3)	
Missing	6	9	
Degree			<0.001
MD only	346 (59.5)	405 (59.1)	
MD & PhD	90 (15.5)	208 (30.4)	
Non-MD	146 (25.1)	72 (10.5)	
Academic rank			0.32
Fellow/Resident/Research Scientist/Instructor	55 (9.5)	57 (8.3)	
Assistant Professor	436 (74.9)	490 (71.5)	
Associate Professor	88 (15.1)	132 (19.3)	
Professor	3 (0.5)	6 (0.9)	
Specialty			<0.001
Basic Sciences	12 (2.1)	22 (3.2)	
Clinical specialties for women, children & families	134 (23.0)	120 (17.5)	
Hospital-based specialties	51 (8.8)	100 (14.6)	
Surgical specialties	12 (2.1)	60 (8.8)	
Medical Specialties	228 (39.2)	310 (45.3)	
Non-MD	145 (24.9)	73 (10.7)	

proportion of men and women who asked for increased space or equipment overall, as well as among the subgroup expressing perceived inadequacy of space. We then described negotiation outcomes, both by considering what proportion of men and women who asked for additional resources had their requests fully granted or partly granted, as well as what proportion continued to be dissatisfied or perceived their resources as inadequate, despite having negotiated.

We constructed logistic regression models to adjust the significance of the comparisons by gender for the effects of race, K award type, year of K award, degree, academic rank, specialty, and institution funding level. Most characteristics were categorical and modeled as indicator variables with a reference category. Continuous variables were centered at their

medians. For all statistical comparisons, p values  $\leq 0.05$  are considered significant.

## RESULTS

1,719 K awardees were identified, of whom 1,708 (99.4 %) were surveyed; 1,275 (74.6 %) responded to the survey. Comparison of survey respondents with nonrespondents revealed no significant differences by gender or K award year. We did observe differences by K award type: 78 % of K23 recipients responded, compared with 71 % of K08 recipients ( $p=0.002$ ). Additionally, 81 % of non-MDs responded, compared with 74 % of MDs, and 72 % of MD/PhDs ( $p=0.02$ ). Of the respondents, 1,267 (99.4 %) reported an academic affiliation. Eight

Table 2. Perceived Adequacy of and Satisfaction with Resources, by Gender

	Females N/N <sub>total</sub> (%)	Males N/N <sub>total</sub> (%)	p values <sup>*</sup>
% reporting inadequate access to the following resources:†			
Research space	120/567 (21.2)	150/678 (22.1)	0.682, 0.941
Research equipment	77/533 (14.4)	104/658 (15.8)	0.516, 0.707
Access to secretarial support	324/579 (56.0)	334/678 (49.3)	0.018, 0.082
Access to grants administrators	202/579 (34.8)	184/684 (26.9)	0.002, 0.002
Access to statistical support	283/567 (49.9)	282/650 (43.4)	0.023, 0.025
Square feet of laboratory space‡: N/N <sub>total</sub> , Mean (SD)	141/218, 528 (520)	341/440, 561 (429)	0.009, 0.617
% Dissatisfied with research funding	193/574 (33.6)	237/659 (34.9)	0.634, 0.288
% Desiring decrease in clinical hours	141/563 (25.0)	178/672 (26.5)	0.564, 0.788
% Dissatisfied with salary	226/577 (39.2)	258/679 (38.0)	0.671, 0.841

<sup>\*</sup>p values are for the unadjusted chi-square (unadjusted comparison of gender) and for the logistic regression Wald test (adjusted comparison for race, K award type, year of K award, degree (MD, PhD, vs. MD/PhD), academic rank, specialty, and K award institution tier)

†Reporting frequencies and percentages for “less than adequate” or “inadequate”

‡For this question, the sample was restricted to those reporting their research to be laboratory-based

respondents (0.6 %) reported either not currently working in academia or reported having only clinical and not academic duties. Those cases were excluded and the sample size analyzed was 1,267.

Table 1 presents the overall characteristics of our sample (N=1,267), which included 582 (46 %) women and 685 men (54 %). For both genders, median age was approximately 40 years (40.0±4.7 for women and 40.5±3.9 for men; p=0.08). Women were less likely to be married than men (87.4 % vs. 92.2 %; p=0.006) and were less likely to have children (76.6 % vs. 82.0 %; p=0.018). The majority of women in our sample held K23 awards (63.6 %), and the majority of men held K08 awards (60.2 %). Women were less likely to have both MD and PhD degrees and were more likely to have a non-MD degree (15.5 % vs. 30.4 % and 25.1 % vs. 10.5 %, respectively; both p<0.001).

Table 2 presents respondents' perceptions of the adequacy of their resources. No significant differences were observed in regard to access to research space. In contrast to the lack of

significant differences in perceived adequacy of physical resources, we did find significant gender differences in perceived access to human resources. Women were more likely to rate their access to secretarial support, grants administrators and statistical support as inadequate (56 % vs. 49.3 %; p=0.082, 34.8 % vs. 26.9 %; p=0.002, and 49.9 % vs. 43.4 %; p=0.025, respectively).

Table 3 describes negotiating behaviors by gender. Overall, similar percentages of women and men asked, in the past two years, for increased lab equipment and research space (30.3 % vs. 35.4 %; p=0.50) as well as increased research funding (29.3 % vs. 31.2 %; p=0.71). Women were more likely than men to have asked in the last two years for a reduction in clinical hours (24.1 % vs. 19.3 %; p=0.02). Also, 42.9 % of women and 35.9 % of men had asked for a raise in the past two years (p=0.09). Overall, 50.2 % of women and 38.2 % of men reported raising concerns about unfair treatment with a superior at least once in the preceding two years (p<0.001).

Table 3. Negotiation Behaviors, by Gender

	Females N/N <sub>total</sub> (%)	Males N/N <sub>total</sub> (%)	p values <sup>*</sup>
OVERALL:			
% who asked a superior at their institution in the past two years for:			
Increased lab equipment or research space	174/575 (30.3)	241/680 (35.4)	0.052, 0.498 <sup>†</sup>
Increased funding for research	168/574 (29.3)	211/677 (31.2)	0.467, 0.713 <sup>‡</sup>
Reduction in clinical hours	137/569 (24.1)	130/674 (19.3)	0.041, 0.019 <sup>§</sup>
A raise	247/576 (42.9)	244/680 (35.9)	0.011, 0.089 <sup>¶</sup>
% reporting raising concerns about unfair treatment with a superior at least once	287/572 (50.2)	258/675 (38.2)	<0.001, <0.001
AMONG THOSE CURRENTLY EXPRESSING INADEQUACY OR DISSATISFACTION:			
% who asked a superior at their institution in the past two years for:			
Increased lab equipment or research space <sup>  </sup>	88/142 (62.0)	104/185 (56.2)	0.295, 0.160
Increased funding for research <sup>#</sup>	83/191 (43.5)	109/236 (46.2)	0.573, 0.846
Reduction in clinical hours <sup>**</sup>	68/138 (49.3)	69/175 (39.4)	0.081, 0.143
A raise <sup>††</sup>	118/223 (52.9)	121/258 (46.9)	0.188, 0.371

<sup>\*</sup>p values are for the unadjusted chi-square (unadjusted comparison of gender) and for the logistic regression Wald test (adjusted comparison for race, K award type, year of K award, degree (MD, PhD, vs. MD/PhD), specialty, and K award institution tier)

<sup>†</sup>p values are adjusted for the characteristics listed in <sup>\*</sup> above, and also for the questions C3a and C3b—adequacy of research space and research equipment

<sup>‡</sup>p values are adjusted for the characteristics listed in <sup>\*</sup> above, and also for the question C1c—satisfaction with level of research funding

<sup>§</sup>p values are adjusted for the characteristics listed in <sup>\*</sup> above, and also for the question B10—time preference for patient care

<sup>¶</sup>p values are adjusted for the characteristics listed in <sup>\*</sup> above, and also for the question C1d—satisfaction with current salary

<sup>||</sup>Among those reporting inadequacy of research space or research equipment

<sup>#</sup>Among those reporting inadequacy of research funding

<sup>\*\*</sup>Among those reporting wanting a decrease in their time spent on patient care

<sup>††</sup>Among those reporting being dissatisfied with current salary



Table 4 describes outcomes of negotiation by gender: 64.3 % of women and 68.6 % of men who had asked for increased research space or laboratory equipment indicated that their request was at least partially granted ( $p=0.14$ ). Similarly, 63.4 % of women and 65.3 % of men who asked for increased research funding indicated that their request had been at least partially granted ( $p=0.48$ ). Of those asking for decreased clinical hours, 77.4 % of women and 72.6 % of men reported their request was at least partially granted ( $p=0.62$ ). Of those asking for a raise, 77.7 % of women and 73.1 % of men who had asked for a raise indicated that their request had been at least partially granted ( $p=0.29$ ).

## DISCUSSION

In this large survey of recipients of prestigious NIH career development awards, all of whom had dedicated federal funding to provide protected research time and resources for research, we found that a substantial minority perceived their research resources as being inadequate. Women were more likely to perceive inadequacy of access to human resources (specifically administrative and statistical support). Women were also more likely to have requested a reduction of their clinical hours and to have raised concerns about unfair treatment with their superiors. Many recipients of both genders had negotiated to increase other resources. We observed no significant differences in rates of success between women and men asking for increased research space or equipment, increased research funding, or decreased clinical hours.

Even though increasing numbers of women have entered medical school over the past several decades,<sup>18</sup> the proportion of women in the upper echelons of academic medicine remains low.<sup>15,19</sup> A number of gender differences in academic medicine have previously been documented, including

differences in authorship,<sup>20,21</sup> attainment of research funding,<sup>22,23</sup> participation in professional societies,<sup>24</sup> and editorial positions.<sup>25–28</sup> Across academic medicine at large, fewer women than men reach senior faculty status or positions of departmental or institutional leadership.<sup>29</sup> Even in a highly motivated cohort of K award recipients, we have previously discovered substantial differences in career trajectories and measures of academic success.<sup>15</sup> The present results may illuminate some of the mechanisms underlying these disparities. Women in this study were more likely to report dissatisfaction with access to grants administrators and statistical support. Insufficient access to such important human resources could contribute to the decreased publication productivity and funding secured by women, as observed in other studies.

Of note, the gender differences in access to resources that we observed in this study related to human resources rather than physical ones. We find it noteworthy that these human resources to which women perceived lesser access are usually not tightly regulated by superiors and often allocated more informally, through jockeying at the ground level. In fact, we restricted our questions regarding negotiation behaviors to negotiations over physical resources, because the negotiation environment is so much less consistent and defined for the allocation of generally pooled resources, such as administrative and statistical support. Yet, our findings suggest that it may be precisely the sorts of informal negotiations that occur between colleagues and staff every day that may be particularly difficult for women to navigate, and represent settings where unconscious bias may play a greater role. Data show that when processes are less structured and transparent, unconscious bias is more likely to operate.<sup>2</sup>

A critical resource for academic and scientific success is time. Without adequate access to administrative support, researchers' ability to devote their scarce working time towards research can be compromised by the need to perform

Table 4. Outcomes of Negotiation, by Gender

	Females N/N <sub>total</sub> (%)	Males N/N <sub>total</sub> (%)	p values*
<i>AMONG THOSE ASKING FOR INCREASED RESEARCH SPACE OR LAB EQUIPMENT:</i>			
% partly or fully granted	101/162 (64.3)	153/223 (68.6)	0.200, 0.189
% not granted	61/162 (37.7)	70/223 (31.4)	
% currently with inadequate space or equipment	88/174 (50.6)	104/240 (43.2)	0.135, 0.177
% currently with inadequate research space	74/174 (42.5)	85/240 (35.4)	0.142, 0.276
% currently with inadequate lab equipment	46/165 (27.9)	59/232 (25.4)	0.586, 0.623
<i>AMONG THOSE ASKING FOR INCREASED FUNDING:</i>			
% partly or fully granted	102/161 (63.4)	130/199 (65.3)	0.698, 0.479
% not granted	59/161 (36.7)	69/199 (34.7)	
% currently dissatisfied with research funding	83/167 (49.7)	109/211 (51.7)	0.705, 0.904
<i>AMONG THOSE ASKING FOR DECREASED CLINICAL HOURS:</i>			
% partly or fully granted	103/133 (77.4)	90/124 (72.6)	0.368, 0.617
% not granted	30/133 (22.6)	34/124 (27.4)	
% preferring their time spent on patient care be decreased	68/137 (49.6)	69/130 (53.1)	0.833, 0.968
<i>AMONG THOSE ASKING FOR A RAISE:</i>			
% partly or fully granted	181/233 (77.7)	166/227 (73.1)	0.257, 0.290
% not granted	52/233 (22.3)	61/227 (26.9)	
% currently dissatisfied with salary	118/246 (48.0)	121/244 (49.6)	0.719, 0.632

\*p values are for the unadjusted chi-square (unadjusted comparison of gender) and for the logistic regression Wald test (adjusted comparison for race, K award type, year of K award, degree (MD, PhD, vs. MD/PhD), specialty, and K award institution tier)

inappropriate tasks better performed by support staff. With the many competing demands faced by the modern academician, protected time for research can be limited at best and non-existent at worst. Our present study focuses on a sample of faculty highly focused on research careers, who have obtained awards that guarantee support to protect research time. We found that women in this population were more likely to have asked their supervisor for a reduction in clinical hours, suggesting that even though we currently observe no differences in the desire to decrease clinical hours (nor, as we have reported elsewhere,<sup>30</sup> do we currently observe large differences in clinical hours by gender at the time of the survey), women may have been asked to shoulder a greater clinical burden earlier in their careers. Alternatively, greater demands to perform domestic labor may limit the ability of women to expand their work hours to maintain research time when clinical demands are high. As we have previously reported, female physicians from this same survey described spending 8.5 more hours per week on parenting and domestic tasks.<sup>30</sup> This may help to illuminate the gender difference observed here regarding negotiation to limit clinical time.

Salary may also be an important, though little-recognized, resource for academic success. Those who earn more salary may be able to hire additional help for routine domestic tasks, facilitating increased working time, or may utilize the salary directly to facilitate research. We have previously reported that the salary of women physicians in the current sample is lower than that of men, a difference that is not explained by numerous measures of productivity, specialty, personal, or institutional characteristics.<sup>31</sup> Similarly, in a study of individuals who received K awards in 2000–2003, women earned lower salary than men in similar positions with similar credentials in terms of specialty, academic rank, leadership positions, publications, and research time.<sup>16</sup> This may be due to reluctance on the part of women to negotiate as aggressively for a higher starting salary, either to avoid interpersonal conflict with their new employer, or due to a decreased perceived sense of power.<sup>5,7,8</sup> Our present results show that, in our highly motivated cohort of successful academicians, women were not less likely than their male colleagues to have asked for a raise in the two years preceding the survey (with a trend in the opposite direction). To the extent that women have lower salaries, it may be unsurprising that they would be at least as likely to negotiate regarding salary; still, to the extent that some have speculated that gender differences in salary result from women's failure to ask for higher salaries, the current data are valuable in suggesting that this is not necessarily the case in the current sample.

Finally, there exists a difference in the way men and women experience the workplace. Even in the modern era, gender discrimination—both overt<sup>32,33</sup> and covert<sup>2</sup>—exist, and can have subtle but pervasive effects on productivity, interpersonal

interactions, collaboration, and negotiation. Nearly 40 % of women in our cohort reported experiencing unfair treatment in the workplace at least sometimes, and 50 % had raised concerns of unfair treatment with a supervisor (compared to 38 % of men). Though women in our cohort were more likely to bring unfair treatment to the attention to their supervisor, the proportion of women reporting unfair treatment is disappointingly high, suggesting that academic centers should continue to strive to provide a safe workplace free from harassment and discrimination. Mentorship between experienced, successful female academicians and those in the early parts of their careers can also help young women develop skills and best practices to navigate their workplace environment and to achieve to the full extent of their potential.<sup>34</sup>

This study has a number of strengths, including a large number of responses and a high rate of response from a population of high-achieving male and female clinician-researchers. Nevertheless, this study also has limitations. Although the survey questions we used have high face validity and were developed with standard techniques of survey design (including cognitive pretesting<sup>17</sup>), recall, selection and/or other biases may have influenced participant responses. Second, like all survey studies, selection bias is possible, but high rates of survey response and few differences between respondents and nonrespondents suggest that these results likely are generalizable to the entire target population of K award recipients. However, it is important to note that these results may not be as generalizable to academic medical faculty who do not hold such awards. K awards provide dedicated funding and requirements for protected time and resources that may not be as clearly defined for faculty who do not hold these awards. Therefore, this study likely reflects an underestimation of the actual gender differences in resources and efforts to negotiate, making our observations of reduced access to human resources perhaps even more noteworthy, while suggesting more caution when extrapolating to the general population of academic medical faculty regarding areas in which differences were not observed.

Even with increasing numbers of women entering the pipeline, women are still not reaching levels of professional success comparable to their male counterparts. Differences in access to resources necessary for academic and scientific success, and particularly those human resources that are often allocated informally, may account for some of these disparities. Our data show that a substantial proportion of highly motivated female physician-scientists do ask for necessary resources. However, even in this select population, differences in perceived access to human resources exist and merit attention. Awareness on the part of institutional and departmental leaders regarding the need for negotiation training and equitable resource allocation—both with respect to physical and human resources—is essential to reduce gender disparities in success in academic medicine. Targeted interventions, such as implementing gender diversity awareness training for

institutional leaders, as well as research administrators, may also help to achieve these goals.

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