

# Career Flexibility and Family-Friendly Policies: An NIH-Funded Study to Enhance Women's Careers in Biomedical Sciences

Amparo C. Villablanca, M.D.,<sup>1</sup> Laurel Beckett, Ph.D.,<sup>2</sup> Jasmine Nettiksimmons,<sup>2</sup> and Lydia P. Howell, M.D.<sup>3</sup>

## Abstract

**Background:** Although women receive nearly half of all doctoral degrees and show a high interest in academic careers, the pipeline is leaky. The challenge of balancing life course events with career trajectory is an important determinant leading to premature dropout or slower career advancement. This report describes the findings of the first phase of a National Institute of Health Office of Research on Women's Health (NIH ORWH)-funded study using survey and academic data for exploring satisfaction and awareness of/intent to use specific career flexibility options at the University of California, Davis (UCD).

**Methods:** All men and women faculty in the UCD's Schools of Medicine (SOM) and Veterinary Medicine (SVM) and College of Biological Science (CBS) were surveyed. Data also were obtained from deans' offices on use of family-friendly benefits by faculty.

**Results:** Three hundred twenty-five total survey responses were received from the SOM, 83 from SVM, and 64 from CBS, representing 42%, 46%, and 52% of their total faculty, respectively. In each school, large percentages of men (32%–60%) and women (46%–53%) faculty have children under 18 and a moderately high level of demand of family care responsibilities. Women were significantly more likely to be childless, particularly in the SOM (35% vs. 14%,  $p < 0.001$ ). For all schools, documented use of any family-friendly policy was low (0%–11.5%), as was awareness of policies, although both were significantly higher for women than for men. Significantly more women than men wanted to use policies or chose not to, particularly in the SOM (51% vs. 28%,  $p < 0.001$ , and 37% vs. 23%,  $p = 0.016$ , respectively), because of multiple barriers. Faculty in all schools agreed/highly agreed that policies were important to recruitment, retention, and career advancement.

**Conclusions:** Family-friendly policies are pertinent to men and women, as both demonstrate interest and need, linked to increased career satisfaction. A family-friendly policy is important, particularly for women in the biomedical sciences.

## Introduction

AS MORE WOMEN ENTER ACADEMIC CAREERS in medicine and science, there is increased interest in the ways that women's career paths differ from those of men. The National Academy of Sciences, National Academy of Engineering, and the Institute of Medicine all recognize that women are underrepresented in science, engineering, and medicine. A joint report from these institutions, *Beyond Bias and Barrier: Fulfilling the Potential of Women in Academic Science and Engineering*,<sup>1</sup> demonstrated that the number of women in the pipeline is no longer solely to blame. This landmark report concluded that the relatively higher rates of attrition of women from the

science pipeline are coupled to unintentional bias by both sexes. In response, National Institutes of Health Office of Research on Women's Health (NIH ORWH) developed a unique grant initiative to examine factors and interventions that promote women's careers in biomedical sciences.

The pipeline for women in medicine is full at the earliest career phases, as the proportion of women in medical school classes continues to increase.<sup>2</sup> The Association of American Medical Colleges (AAMC) reported that women students are more likely than men to indicate interest in full-time academic medical careers,<sup>3</sup> yet women remain significantly underrepresented among medical school faculty, particularly at the more senior ranks. In 2005, only 28% of all faculty members

<sup>1</sup>Department of Internal Medicine, <sup>2</sup>Department of Public Health Sciences, and <sup>3</sup>Department of Pathology, University of California, Davis, California.

were women,<sup>4</sup> a small gain from 5 years earlier, when 14% of medical school faculty were women, but disproportionate compared to enrollment of first-year medical students and residents, where women represent 45% and 41% of their class, respectively. The AAMC's 2005 data showed that 70% of women in schools of medicine were in the junior ranks compared to 47% of male faculty, a disparity that has existed for over 20 years. Women leak out of the pipeline at all levels and independent of type of department. The percentage of female medical faculty at the rank of full professor has shown only small gains over time, from 7% in 1978 to 9% in 1990 and 15% in 2005.<sup>4</sup> Many reports have demonstrated that the number of women who advance to the ranks of associate and full professor remains significantly lower than for men and lower than expected for sciences in general.<sup>4-9</sup>

Successful career progression requires interaction of positive influences on both the individual and institutional levels, as each can influence a faculty member's available time, resources, drive, and productivity. A myriad of obstacles are encountered by women faculty during their academic careers, including individual, family, and institutional/societal influences, and contribute to the steady leaks in the pipeline ([awis.org/documents/LeboyNAS.Sept08.pdf](http://awis.org/documents/LeboyNAS.Sept08.pdf)).<sup>8,10-18</sup> A study of University of California faculty showed that women faculty had children at a younger age than men, spent more time on child rearing and housework than men, and were less likely to make tenure than men if they had a child < age 5.<sup>19</sup> The pipeline metaphor may, therefore, wrongly suggest that science careers progress along a relatively steady rigid advancement pathway. Instead, the stratification of men's and women's career outcomes may actually reflect the cumulative effect of small influences at particular points in time, which include the effect of life events, such as the birth of a child or care for ailing parents or children.<sup>20-22</sup> Women are more likely to be affected by these events and deflected in their career trajectories because they continue to bear the majority of these responsibilities in both traditional and egalitarian families.

Maintaining women faculty in the academic pipeline may, therefore, require that responsibilities in family life can be sufficiently accommodated so that conflict with career is minimized and work-life balance is supported. Additional institutional support for working parents is one of the solutions proposed by the National Academy of Sciences in *Beyond Bias and Barrier*.<sup>1</sup> The University of California (UC) has been a leader in promoting faculty career flexibility through its Family-Friendly Accommodation Policies introduced in 1988. A 2006 award from the American Council on Education (ACE) and Alfred P. Sloan Foundation allowed the UC's Berkeley and Davis campuses to address communication and awareness issues in order to increase use and enhance a culture of flexibility. However, the health science schools, including the medical schools, were excluded from the ACE-Sloan award interventions because of the unique differences of the health science faculty, which include the variety of academic tracks, a different compensation structure, clinical duties, and no summer release time.

To address the many unique needs of medical school faculty, the UC Davis School of Medicine (UCD SOM) created its own family accommodation policies and enhanced insurance benefits to provide more career flexibility (Tables 1 and 2). Policies for UCD SOM were developed by then-Associate Dean of Academic Personnel (L.P.H.) after several years of

TABLE 1. FULL SALARY LEAVES FOR CHILDBEARING OR FAMILY LEAVE

	<i>Childbearing</i>	<i>Adoption/placement</i>
Who	Faculty member giving birth	Faculty with >50% responsibility of child care for child <5 years old
Time and duration	Full-time leave for 12 weeks maximum	Full-time leave for 12 weeks maximum
Salary	Full salary	Full salary
Healthcare benefits	Maintained	Maintained

development with the campus leadership and the UC Office of the President. These policies were implemented uniformly throughout our school beginning in 2004. In 2006, following the lead of our school, similar career flexibility policies were adopted in the School of Veterinary Medicine (SVM) and College of Biological Sciences (CBS) and across the entire 10-campus UC system. Despite our school's many efforts to communicate these policies, however, we have observed that there is still considerable confusion and misinformation among the faculty and department leadership. Although the number of women taking a maximal 3-month maternity leave has increased 3-fold since introduction of the new policies, the percentage of women taking a leave of  $\leq 1$  month remains predominant and unchanged, raising concern that knowledge of the policies may be suboptimal or that bias or fear of repercussions may be preventing use of the policies.

This study assessed faculty awareness, attitudes, use, and barriers to use of the UCD SOM's flexible career policies and compared these to those of faculty in the UCD SVM and CBS as health science and nonhealth science comparators, respectively. We used the comparators because we were interested in assessing the degree to which awareness, attitudes, and use of the policies available to faculty members were specific to SOM faculty or were shared with other health science faculty (SOM vs. SVM comparison) and were more broadly generalizable to nonhealth science biologic science faculty (SOM/SVM vs. CBS comparison).

This report is a cross-sectional description of the current status of flexible career policies across the three schools before a planned intervention in the SOM. Our goals are to improve understanding of how faculty perceive and use these policies and to assess whether there are key differences in usage and understanding of policies among male and female faculty in the three schools. Results of this descriptive study may guide UCD and other universities to adapt the policies and their implementation to improve faculty satisfaction and career development in these disciplines.<sup>23</sup>

## Materials and Methods

### Overview

This report describes the first phase of a larger 4-year intervention study. In this phase, baseline data were obtained from a survey administered in the spring of 2010 to all men and women academic faculty in UCD SOM, SVM and CBS, supplemented by administrative data from the three schools. The survey was designed to assess knowledge, awareness and

TABLE 2. CHILD REARING AND FAMILY LEAVES AT REDUCED SALARY

	<i>Family and medical leave<sup>a</sup></i>	<i>Parental leave</i>	<i>Active service modified duties</i>	<i>Part-time appointment</i>
Who	1+ year university service, responsible for 50+% child care	Any faculty member	1+ year university service, responsible for 50+% child care	At chair's discretion and academic/business needs
Time and duration	Full-time leave for 12 weeks maximum	Full-time leave for 1 year maximum (other leaves included)	Negotiated part-time for 12 weeks maximum	Negotiated % reduction, renewable at reappointment time
Salary	None	None	Full base, Y <sup>b</sup> reduced proportional to duty reduction	Base and Y reduced proportionate to duty reduction
Healthcare benefits	Maintained	None	Maintained	Maintained if 50% appointment

<sup>a</sup>Family and medical leave may also be used for care or death of a family member or others residing in the household.

<sup>b</sup>Y, negotiated component of nonbase faculty salary and funded from sources other than state funds, such as clinical income and grants. This salary component is typically not present in schools and colleges other than medicine. The reduction above is a policy of the University of California, Davis School of Medicine only.

use of career flexibility options in each school, as well as barriers to policy use and career satisfaction.

#### *Survey design and implementation*

Baseline determinations of career satisfaction and awareness of/intent to use specific UCD SOM career flexibility options were evaluated by a Work, Family, and Satisfaction Survey. The 53-item survey instrument, adapted for this study, uses survey domains and parameters based on the institution's Sloan award. Use of this instrument has been validated in over 10,000 faculty participants and is available for unrestricted use from the Clear Picture Corporation in partnership with the Alfred P. Sloan Foundation. The survey was enhanced for this study with additional demographics. In addition, survey domains adapted from the AAMC's Collaborative on Academic Careers in Higher Education (COACHE) satisfaction survey ([www.aamc.org/services/facultyforward/68024/facultyforward\\_aamc\\_coache\\_survey.html](http://www.aamc.org/services/facultyforward/68024/facultyforward_aamc_coache_survey.html); Accessed November 15, 2010) were included to capture and assess parameters pertinent to career satisfaction with comparative relevance to the AAMC survey instrument. The SOM's Director for Evaluation Programs for the clinical and translational science center (CTSC) provided additional input before survey implementation. The study and survey were approved for use by the institution's Institutional Review Board. We were interested in faculty's experience in the past decade (since 1999), when significant new family-friendly policies began to be implemented at UCD. Accordingly, surveys assessed faculty's 10-year experience with use and intention to use policies, awareness of options (for leaves for mothers/fathers, personal disability, tenure clock stoppage, part-time appointments), barriers to use of policies, and career satisfaction. Surveys additionally assessed faculty demographics: sex, age, race, ethnicity, marital status, parental status, level of demand of family responsibilities, academic rank, academic series, primary area of specialty, years since faculty appointment at UCD, and full-time or part-time appointment.

There are five faculty series, or tracks, in the UC system. Three are research-intensive tracks (Regular, In Residence, Adjunct) in which faculty are expected to spend the majority of their time engaged in thematic hypothesis-based research.

There are also two clinically intensive series used exclusively in the health sciences schools: Clinical X for clinician-investigators and Health Science (HS) Clinical Professor for clinician-educators. Of the five series, only the Regular and Clinical X series are members of the Academic Senate. Only the Regular series receives state funds and offers true tenure with security of employment. In the health science schools, Regular series faculty are a minority of the total faculty. As an example, at UCD SOM, approximately 30% of the faculty are appointed in the Regular series, 20% are in the other research intensive series, and 50% are in the clinically intensive series.

The survey was constructed using Survey Monkey<sup>®</sup> and was administered electronically for a 3-week period (March 17, 2010–April 7, 2010) by e-mail to all faculty in the SOM, SVM, and CBS. Two e-mail reminders were sent to faculty who had not yet completed the survey prior to the survey close date. Completion rates were tracked to minimize excessive reminders. Participation was voluntary, and responses were anonymous and confidential. The output was generated using Survey Monkey, and reports were generated as de-identified Excel spreadsheets and exported for analysis to the SOM's Division of Biostatistics with a data dictionary. The following strategies and incentives were used to optimize survey response rates: (1) an introductory e-mail to faculty to encourage completion of the survey, (2) encouragement by the school leadership and department chairs, (3) encouragement by Faculty Development Directors and Faculty Life Mentors (established for this study for each department with the assistance of each department chair), (4) a \$200 gift certificate to Amazon.com to the school with the highest response rate, and (5) a \$100 gift certificate to Amazon.com for survey completion for one faculty member from each school (random drawing of voluntary faculty-submitted name entries).

#### *Study population*

We used more than one representative sample by comparing three academic units at UCD: two health science disciplines, the SOM and the SVM, and one nonhealth science but related discipline in biology, CBS. The rationale for selecting the comparison groups was as follows: (1) the three

TABLE 3. DEMOGRAPHICS OF ACADEMIC FACULTY: ALL FACULTY AND SURVEY RESPONDENTS

Characteristic	SOM		SVM		CBS	
	All faculty <sup>a</sup> n (%)	Survey respondents n (%)	All faculty <sup>a</sup> n (%)	Survey respondents n (%)	All faculty <sup>a</sup> n (%)	Survey respondents n (%)
Total survey responders: 568 (%)						
Gender						
Male	535 (68.7)	195 (61.9)	105 (58.7)	39 (48.1)	88 (72.1)	43 (69.4)
Female	244 (31.3)	120 (38.1)	74 (41.3)	42 (51.9)	34 (27.9)	19 (30.6)
Age (years)						
Male						
<50		85 (45.7)		17 (44.7)		21 (48.8)
50-67		91 (48.9)		20 (52.6)		18 (41.9)
68-84		10 (5.4)		1 (2.6)		4 (9.3)
Female						
<50		77 (64.7)		27 (64.3)		7 (36.8)
50-67		41 (34.5)		14 (33.3)		12 (63.2)
68+		1 (0.8)		1 (2.4)		0 (0)
Race/ethnicity						
Hispanic		13 (4.5)		1 (1.3)		1 (1.7)
Caucasian		230 (77.7)		76 (97.4)		51 (87.9)
African American		4 (1.4)		1 (1.3)		0 (0)
Asian		62 (20.9)		1 (1.3)		7 (12.1)
Other		0		0		0
Rank						
Assistant professor	317 (40.7)	99 (31.4)	68 (38)	26 (32.1)	32 (26.2)	9 (14.5)
Associate professor	170 (21.8)	77 (24.4)	31 (17.3)	25 (30.9)	20 (16.4)	10 (16.1)
Full professor	292 (37.5)	139 (44.1)	80 (44.7)	30 (37)	70 (57.4)	43 (69.4)
Female rank						
Assistant professor	136 (55.7)	53 (44.2)	36 (48.6)	16 (39)	11 (32.4)	3 (15.8)
Associate professor	51 (20.9)	32 (26.7)	22 (29.7)	15 (36.6)	5 (14.7)	6 (31.6)
Full professor	57 (23.4)	35 (29.2)	16 (21.6)	10 (24.4)	18 (52.9)	10 (52.6)
Series						
Professorial	213 (27.3)	94 (29.8)	123 (68.7)	51 (62.2)	120 (98.4)	61 (98.4)
In-residence	68 (8.7)	34 (10.8)	1 (0.6)	1 (1.2)	0	0
Clinical X	218 (28)	94 (29.8)	45 (25.1)	19 (23.2)	0	0
HS clinical professor	215 (27.6)	66 (21)	3 (1.7)	6 (7.3)	0	0
Adjunct	65 (8.3)	25 (7.9)	7 (3.9)	5 (6.1)	2 (1.6)	1 (1.6)
Don't know		2 (0.6)		0		0
Female series						
Professorial	54 (22.1)	27 (22.5)	44 (59.5)	22 (52.4)	32 (94.1)	18 (94.7)
In-residence <sup>b</sup>	14 (5.7)	11 (9.2)	1 (1.4)	1 (2.4)	0	0
Clinical X <sup>b</sup>	69 (28.3)	39 (32.5)	22 (29.7)	10 (23.8)	0	0
HS clinical professor <sup>b</sup>	79 (32.4)	33 (27.5)	3 (4.1)	5 (11.9)	0	0
Adjunct	28 (11.5)	10 (8.3)	4 (5.4)	4 (9.5)	2 (5.9)	1 (5.3)
Don't know	0	0	0	0	0	0
Appointment						
Part-time (%)		19 (6)		4 (4.9)		0
Full-time (%)		294 (93)		78 (95.1)		62 (100)

(continued)

TABLE 3. (CONTINUED)

Characteristic	SOM		SVM		CBS	
	All faculty <sup>a</sup> n (%)	Survey respondents n (%)	All faculty <sup>a</sup> n (%)	Survey respondents n (%)	All faculty <sup>a</sup> n (%)	Survey respondents n (%)
Total survey responders: 568 (%)	779	325 (42%)	179	83 (46%)	122	64 (52%)
Length of faculty appointment, years						
Other (%)		3 (0.9)		0		0
1-5		116 (36.6)		27 (32.9)		9 (14.5)
6-10		78 (24.6)		18 (22)		16 (25.8)
11-15		42 (13.2)		17 (20.7)		12 (19.4)
16-20		33 (10.4)		7 (8.5)		7 (11.3)
20+		48 (15.1)		13 (15.9)		18 (29)
Specialty						
Surgery/subspecialty		55 (16.9)		10 (12.0)		0
Medicine/subspecialty		100 (30.8)		20 (24.1)		0
Hospital-based		56 (17.2)		23 (27.7)		0
Basic scientist, clinical department		46 (14.2)		9 (10.8)		0
Basic scientist, non-clinical department		51 (15.7)		18 (21.7)		0
NA/declined to state		17 (5.2)		3 (3.6)		64 (100.0)

<sup>a</sup>All faculty data were provided by the Chancellor's office and based on individuals who were present in 2009. Survey data are based on faculty e-mail lists from 2009.

<sup>b</sup>This classification does not exist in College of Biological Sciences (CBS) and in CBS specialty; was not applicable (NA). HS, health sciences; SOM, School of Medicine; SVM, School of Veterinary Medicine.

units have similar proportions of women and similar patterns of academic attrition for women (i.e., more women at the assistant and associate professor levels than at the level of full professor), (2) CBS is already participating in an intervention as part of the campuswide effort to accelerate the use and awareness of options (described further below) and, as such, was a suitable nonhealth sciences intervention comparison for the SOM, and (3) SVM, as the other health sciences school at UCD, is not currently participating in the campuswide intervention program and, thus, was a suitable health sciences nonintervention comparison group for the SOM.

#### *Additional data sources*

The surveys assessed self-report of faculty use of policies over a 10-year period. Actual policy use was validated for the last 3 years (2007–2009) using de-identified data provided by the Dean's Offices for Academic Affairs for SOM, SVM, and CBS, drawn from school personnel databases. In addition, we obtained academic demographic data (gender, race, ethnicity, rank, series, type of appointment (part-time or full-time), and years at UCD), for the last 3 years (2007–2009) from the UCD campus Provost's office. The Provost's data provided a benchmark for determining if the survey respondents were representative of the faculty in each of the three schools.

#### *UCD SOM's flexible career policies*

Prior to our introduction of uniform family-friendly policies (Academic Personnel Manual Policy 760 Family Accommodations for Childbearing and Childrearing ([www.ucop.edu/acadadv/acadpers/apm/apm-760.pdf](http://www.ucop.edu/acadadv/acadpers/apm/apm-760.pdf); Accessed September 9, 2010), each department within the SOM could specify its own leave policies within the department's compensation plan. As a result, there were considerable disparities between departments for length of leaves and for the associated compensation during a leave. Some wealthy departments offered more generous benefits than less wealthy departments, departments with few women often offered shorter childbearing leaves than those with more women, and some departments designated different benefits to their faculty based on academic series/track. The introduction of uniform family-friendly flexible career policies was intended to increase faculty satisfaction, eliminate feelings of second-class citizenship among some faculty, and create the culture of oneness that our school wished to promote.

Concurrent with the introduction of our uniform leave policies, our school expanded medical leave policies and insurance coverage to better accommodate disability because of pregnancy and medical problems. There were also enhancements to disability insurance in order to continue maximal salary payments during a medical disability. The UCD SOM compensation plan provides full salary coverage for the first 90 days of a medical illness, which is paid by the department. In the second 90 days, disability insurance provided by the UCD SOM pays for 60% of the nonbase variable salary component, and the department provides a second 90 days of base salary coverage. Faculty are also strongly encouraged to purchase supplemental disability insurance, which would then provide 70% of the base salary when the departmental support expires.

The UC career flexibility policies are not limited to leave policies and include opportunities for other forms of flexibil-

ity. These include a stop the clock policy, which permits an assistant professor to extend the time period for promotion beyond the usual 7-year period. An extension can be requested by assistant professors who have primary responsibility for care of a child < 5 years of age or for those who have had a significant illness. Extensions are granted for 1-year intervals for a maximum of 2 additional years. Faculty at any rank can request a deferral of UC's standard academic merit reviews. These are formal reviews that are associated with an increase in base salary and occur every 2 years for assistant and associate professors and every 3 years for professors. Associate professors can also request a deferral for their promotion to professor. These deferrals are provided in 1-year increments for medical, family, or other significant reasons impacting academic productivity and can be requested more than once.

#### *Data analysis and statistical methods*

Survey data were tabulated for men and women in each school, and proportions were calculated for comparisons between males and females within each school in addition to comparisons among the three schools without gender distinctions. Secondary analyses restricted comparisons to faculty < 50 years of age. Exact tests were performed to compare proportions. Analysis of variance (ANOVA) and *t* tests were used to compare means. Significance was set at  $p < 0.05$  for individual tests and for overall *F* and exact comparisons across the three schools. When comparisons were being made among the three schools for variables with more than two levels, exact tests were performed for a reference level compared to all other levels combined. Analysis was performed in R 2.11.0.<sup>24</sup>

## **Results**

### *Academic demographics*

The academic demographic characteristics of all faculty in the SOM, SVM, and CBS and of survey respondents in the three schools are summarized in Table 3. Overall, approximately half of the faculty in the SOM, SVM, and CBS completed the surveys, representing 42%, 46%, and 52% of faculty in those schools, respectively. The gender, series, and rank of survey respondents were in general representative of their proportions in the individual schools. Women were younger than men (62% of women but only 46% of men were < 50 years old). Younger age being more prevalent among women was not true, however, among the CBS respondents. The majority were Caucasian. With the exception of CBS, more of the female faculty were in the assistant professor series than any other series. For the SOM and SVM, relatively more women than men were in nonresearch intensive clinical series (Clinical X, HS Clinical Professor). Most of the survey respondents (93%–100%) in all three schools were full-time faculty. In the health science schools, the length of appointment for over a third of faculty was only 1–5 years.

### *Family demand and family formation*

We used survey data to assess marital status, parental status, family care responsibilities, and self-perceived level of demand of family responsibilities in faculty in all three schools. Overall, most faculty were married (81.0%–95.3%).

However, significantly more women than men were childless in the SOM (35.3% vs. 14.4%,  $p < 0.001$ ), a difference that was not observed in the SVM or CBS. Furthermore, in the SOM, significantly more men than women reported having children not living at home (26.1% vs. 14.3%,  $p = 0.015$ ). Overall 25.6%–42.1% of faculty in all schools reported having other family care responsibilities (e.g., elder parent), and such responsibilities were reported by similar proportions of men and women faculty. Men and women faculty ranked the level of their family responsibilities as significantly demanding to very demanding (mean score 2.2–2.8 out of 5.0).

#### Knowledge and awareness of family-friendly policies

Faculty's knowledge and awareness of existing family-friendly policies were assessed by the surveys (Fig. 1). Overall policy awareness was low, with most faculty in all three schools reporting being somewhat aware to mildly aware of policies for childbearing leave, modified duties, deferral of academic reviews, and reduction to part-time status. There was moderate awareness of extension of time for tenure clock. Overall, women had greater policy awareness than men (mean nonweighted awareness 2.9/5.0 vs. 2.6/5.0, respectively). Women were significantly more aware than men of the option for extension of the tenure clock in the SOM (awareness score of 2.9/5.0 vs. 2.5/5.0,  $p < 0.05$ ) and for childbearing leaves in CBS (3.6/5.0 vs. 2.6/5.0,  $p = 0.011$ ) and SVM (3.3/5.0 vs. 2.6/5.0,  $p < 0.05$ ). Awareness remained significantly greater in women in secondary analyses, restricted to faculty < 50 years of age, to address the tendency for women in two of the schools to be younger than men. In addition,

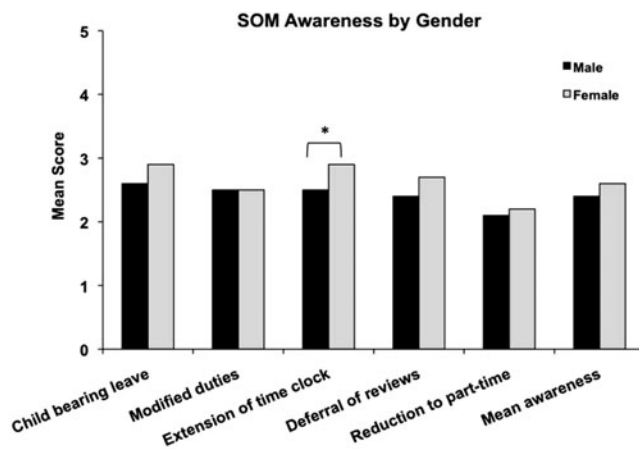


FIG. 1. Family-friendly policy awareness. Awareness of School of Medicine (SOM) male and female faculty of policies/leaves for childbearing leave for up to 12 weeks or one quarter; modified duties to accommodate birth, adoption, or placement (includes paternity leave); extension of time clock to promotion to associate professor for birth, adoption, placement; deferral of merit/promotion reviews to associate professor because of birth, adoption, or placement; and reduction to part-time for family needs. Score: 1 = not aware; 2 = have heard of policy but do not know details; 3 = mildly familiar with details of policy; 4 = moderately familiar with details of policy; 5 = very familiar with details of policy. \* $p < 0.05$ .

policy awareness was overall lowest for faculty in the SOM (mean 2.5/5.0) and highest in CBS (mean 2.9/5.0). The awareness differences between schools were statistically significant ( $p < 0.05$ ) for all policies except childbearing leave and reduction to part-time status.

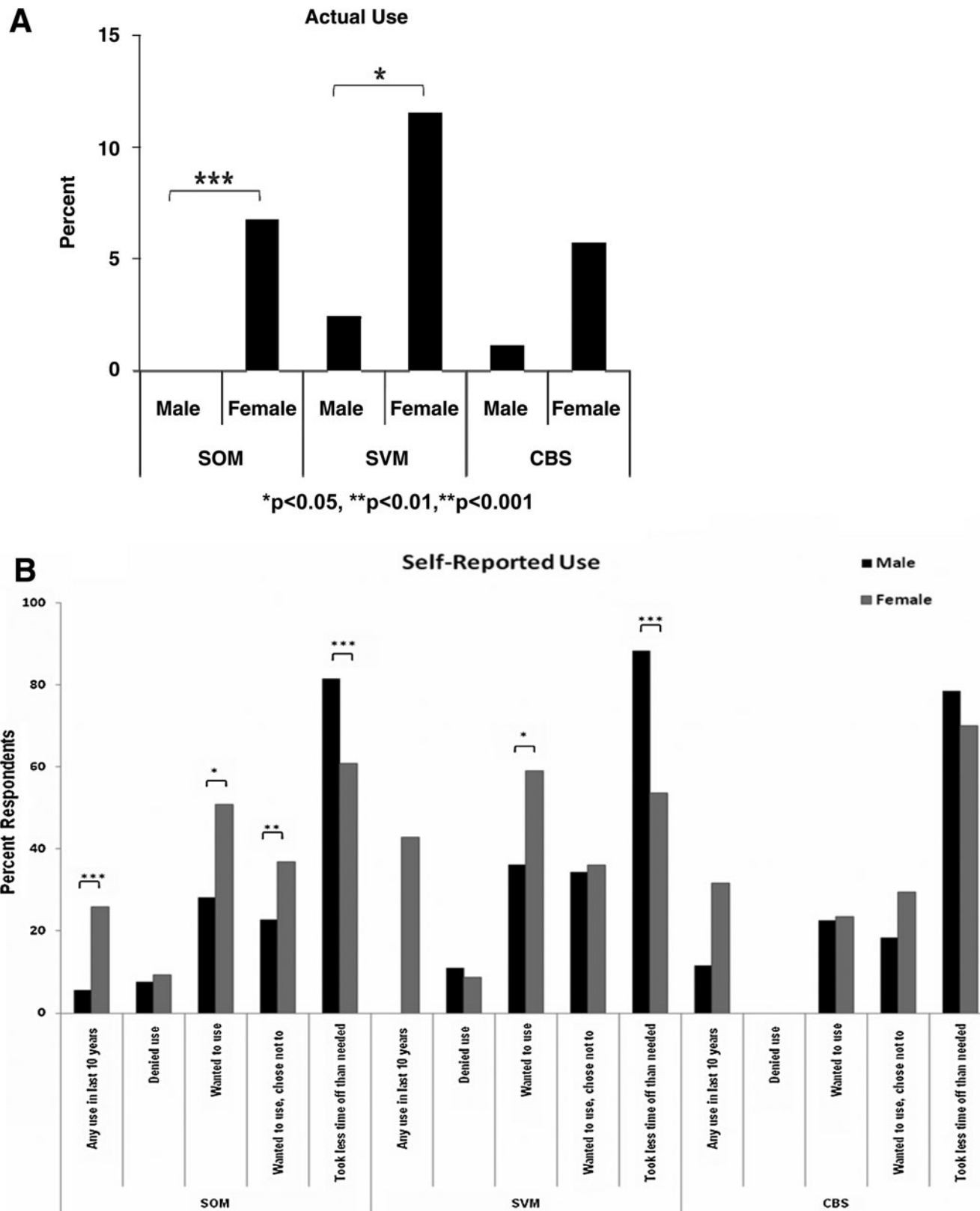
#### Use of policies

We assessed actual and self-reported use of family-friendly policies for all faculty in the three schools. Actual use was derived from data provided by the Dean's office for each school for a 3-year baseline period (2007–2009). Survey responses were used to determine self-reported use of any benefit in the last 10 years. Documented use (Fig. 2A) was overall very low, ranging from 0% to 11.5% of faculty, lowest in the SOM compared to the other schools, and significantly higher for female faculty compared to male faculty in the SOM and SVM (6.7% vs. 0%,  $p < 0.001$ , and 11.5% vs. 2.4%,  $p < 0.02$ , respectively). No men in the SOM had documented use of any of the family-friendly policies offered by the school. In all schools, actual use was higher for women, assistant professors, and full-time faculty, with most leaves taken for maternity.

Self-reported use was higher than actual use. The percent of respondents who reported use of at least one of the family-friendly benefits ranged from 0% to 42.9% (Fig. 2B), with significantly more women than men self-reporting policy use in the SOM (25.8% vs. 5.6%,  $p < 0.001$ ) and SVM (42.9% vs. 0%,  $p < 0.001$ ). Results were very similar in secondary analyses of faculty < age 50. In the SOM, significantly more women than men wanted to use a benefit (50.9% vs. 28.2%,  $p < 0.001$ ) and wanted to use at least one of the benefits but chose not to make a request (36.8% vs. 22.8%,  $p < 0.02$ ). When restricted to faculty < 50, men and women were not significantly different in their potential interest in using benefits. There were significant ( $p < 0.05$ ) differences among the three schools in the percentage of respondents who wanted to use at least one of the benefits (24.1% of respondents in CBS, 36.5% in SOM, and 48.1% in SVM), overall and < age 50. In all three schools, a high percentage of faculty who took time off reported taking less time than needed (53.6%–88.2% of respondents), particularly men in the SOM (81.5% vs. 60.9% women,  $p < 0.01$ ) and in the SVM (88.2% vs. 53.6% women,  $p < 0.05$ ). Relatively few faculty (0%–11.1%) reported having been denied use of a benefit in any of the three schools.

#### Barriers to use

Faculty in all schools indicated a number of reasons for lack of use of available family-friendly policies (Fig. 3). Concerns for service load, financial considerations, and burden on colleagues were common among all faculty in all schools, although faculty also indicated concerns about fear of repercussions, inability to stop work particularly on grant funded projects/research, and slower career progress. There were no significant differences in reasons given among schools or between men and women faculty, with the exception of CBS, where significantly more women than men cited concerns about inability to stop work, particularly on grant funded projects/research (31.6% vs. 7.0%,  $p < 0.05$ ), and slower career progress (26.3% vs. 7.0%,  $p = 0.05$ ). However, with only 14 male responders to these two questions, these data should be interpreted cautiously.



**FIG. 2.** Family-friendly policy use. **(A)** Actual (2007–2009) and **(B)** self-reported (past 10 years) family-friendly policy use for male and female faculty in the SOM, School of Veterinary Medicine (SVM), and College of Biological Sciences (CBS). Actual use of any policy (% of faculty) was provided by the Deans’ offices for each school. Self-reported use (% respondents) was provided by respondents to study surveys for use of one or more policies in the past 10 years, denial of a request for policy use, wanted to use a policy but did not, wanted to use a policy but chose not to make a request, and did not take as much time off as felt needed. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .



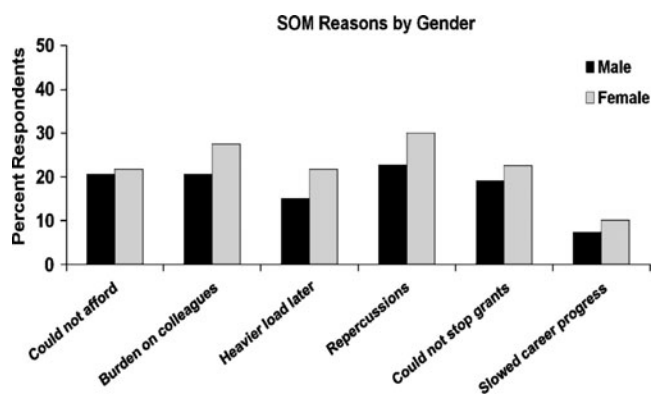


FIG. 3. Barriers to policy use. Reasons provided by SOM male and female faculty (% respondents) for lack of policy use as follows: could not financially afford it, might have placed an undue burden on colleagues, might have led to a heavier service load later, working on grant-funded research and could not stop working full-time, worried about repercussions, and did not want to stop or slow down the time clock to promotion.

*Career satisfaction*

The level of overall career satisfaction was assessed directly by a survey question for all men and women in all three Schools. The mean overall career satisfaction score for men was 2.2 and for women was 2.3 (score scale: 1 = highly satisfied, 3 = neutral, 5 = highly dissatisfied). Faculty in all three schools reported substantial satisfaction because of the existence of family-friendly benefits regardless of use (83.8%–94.4% of respondents) and because of possible future use of benefits (75.7%–92.3% of respondents) (Fig. 4). In the SOM, significantly more women than men reported satisfaction with policy existence and possible use of policies ( $p < 0.05$  and  $p = 0.001$ , respectively). However, women in the SOM were

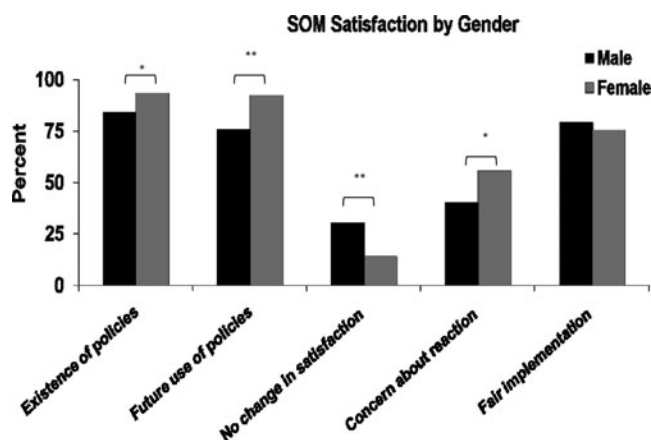


FIG. 4. Career satisfaction. Self-reported career satisfaction for male and female faculty (% respondents) in the SOM as a consequence of the existence of family-friendly policies due to increase in satisfaction even though may not use policies; increase in satisfaction because may need to use policies; no change in satisfaction; concern about how colleagues, chair, review committees, or others will react to policy use; and policies implemented fairly and applied to everyone in a fair manner. \* $p < 0.05$ ; \*\* $p < 0.01$ .

significantly more concerned than men (55.7% vs. 40.2%,  $p < 0.05$ ) about the reaction of colleagues to use of family-friendly benefits. Also, 52.9%–94.4% of faculty reported fair implementation of family-friendly policies in their school, with no gender differences seen except for women in the SVM, who reported significantly less fairness in policy implementation compared to men (52.9% vs. 85.3%,  $p < 0.01$ ). Furthermore, faculty in all three schools agreed that family-friendly policies are highly important for recruitment, retention, and career advancement. These issues were significantly ( $p < 0.001$ ) more important for women compared to men in the SOM. In addition, there were significant ( $p < 0.001$ ) differences among the schools in level of satisfaction with career-family balance, with faculty in the SVM reporting lower levels of satisfaction. These findings did not differ materially in analyses restricted to faculty members < age 50.

*Additional faculty concerns and comments*

A total of 521 comments were electronically submitted by faculty with the surveys; 392 were categorized into one or more of five categories. The majority of comments, 59%, related to family issues (e.g., childbearing/leave, maternity/paternity, older parent/spouse illness, child care, family time), 19% to administrative issues and administrative policies, 14% to colleagues concerns including work burden of colleagues, 5% to job security and advancement, and 3% to external issues. There were no differences noted between the schools in the comments, with the exception of administrative issues, which were raised in 19.9% and 23.4% of responses by SOM and SVM faculty, respectively, and 0% of faculty in CBS. Examples include: “I still remember the enormous sense of relief I felt when I found out I was going to be able to take 12 weeks of maternity leave and that I could add my vacation to it. Thank you so much.” “I am glad we have them (flexible policies) and fully support the concept.” “It has been a long time coming and is overdue even though I have had no need for such services.” “At this stage of my life, I am more interested in how I can balance work with possibly taking care of my elderly parents.” These comments reflect the value faculty place on the existence of policies.

**Discussion**

This report summarizes findings from a baseline survey of faculty in the first phase of a study of the SOM, SVM, and CBS at UCD. Notably, we found that awareness of family-friendly policies and the details of their implementation is low at all three schools, even though the CBS was included in a career-flexibility accelerator intervention funded by ACE and the Alfred P. Sloan Foundation and the SOM has developed and promoted a program taken as a model by other UC-system medical schools. Use of the policies has been very low, whether assessed by self-report or by direct report from the Deans’ personnel databases. Women were more aware of and made more use of the policies than men, and assistant professors were more aware and made more use than those at higher ranks. This likely reflects the interest in and need for family leave for pregnancy, most commonly among younger women faculty.

Lack of awareness is one obstacle to use of family-friendly policies, but our survey identified numerous other self-reported barriers. A significant number of faculty reported

choosing not to request family-flexible accommodations, and this is more common among women than men in SOM and SVM. This difference was not observed in CBS and may reflect a different attitude or work-life culture in healthcare academic careers than in those in science. This could also be related to patient care obligations, including on-call responsibilities, and to differences in compensation plans. In all three schools, a substantial percentage of faculty who did take time off reported not taking as much time as they wanted. In the SOM and SVM, significantly more men than women would have wanted to take more time off than they did. This may reflect perceived biases against time off for men, discomfort with taking time off, concerns of being stigmatized, or institutional culture. The reported barriers to using policies were generally similar across schools, although more women than men in SVM and CBS cited financial reasons for not taking time off. Women in all schools reported more concern than men about the undue burden on their colleagues, heavier service load, other repercussions in their departments, obligations to grant-funded research, or slowing career progress.

Our survey also indicated that absence of career flexibility affected women much more significantly than men, particularly for SOM faculty. SOM women were much more likely to report remaining childless or having fewer children than they desired. A lower percentage of women reported having children living at home, even though equal numbers of men and women reported being married or in committed relationships, and more women than men were < age 50.

Our findings for the SOM are consistent with previous studies that have tracked the impact of professional careers on professional women. In a 20-year longitudinal study of 160,000 Ph.D. candidates, compared to men, women were less likely to be married with children, reported having fewer children than desired, and were more likely to report remaining single because of their career.<sup>19</sup> Women who had children early were more likely to remain nontenured than their male counterparts. Interestingly, women faculty in CBS and SVM did not demonstrate these same gender disparities. This may reflect the success of the campus's long-standing family friendly policies in CBS and a uniquely supportive culture in SVM where the majority of students and higher proportions of faculty are women.

We wish to emphasize that family-friendly policies are not just a women's issue. Our study found that more than half of men and women faculty have children < age 18. Faculty of both genders show a strong interest in on-site child care, and similar and substantial percentages of men and women report other significant family responsibilities. A strong majority of men and women in all schools in our study reported increased satisfaction just knowing that these policies exist and that they might need to use them in the future. In addition, reports on generational differences, including those specific to academic medicine, emphasize that work-life balance and family time are particularly important to both men and women of the younger generation.<sup>25-28</sup> This priority is anticipated to have a growing effect on medical faculty career satisfaction, recruitment, and retention.<sup>29-37</sup> As a result, the AAMC's recent faculty satisfaction survey (COACHE) included a strong emphasis on work-life balance and career flexibility to aid schools in evaluating these issues.

Our study has some limitations. The response rates among the three schools ranged from 42% to 52%, leaving open the

possibility of substantial response bias. However, our response rates are on the high side of typical for such studies,<sup>38,39</sup> and the respondents were broadly similar to the faculty composition of the three schools in age, gender, academic rank, and series. The survey we used for this study did not use skip logic or branching, as this was not a functionality in Survey Monkey for the scenarios posed in the surveys. Therefore, every faculty member was provided the opportunity to answer every question on both awareness and usage. We found some discrepancies between the Deans' personnel records on use of family-friendly policies and self-reported use. This may reflect a difference in periods covered (just the most recent 3 years for the Deans' data but the last 10 years in the survey) or misinterpretation by faculty of whether time off was in fact credited to family-friendly leave rather than to vacation or sick leave.

Our study, despite some limitations, offers considerable strength in its broad pattern of response across all ages, both genders, and university ranks. Another strength is the ability to compare across two health science schools and a biological nonhealth science school, all having access to a broad array of family-friendly policies. Our findings strongly confirm that family-friendly career flexibility policies are important personally to faculty of both genders and that faculty believe that this will improve recruitment, retention, and satisfaction. Our study also indicates the need for further education of faculty to increase awareness and for education of chairs, department managers, and administrative staff so that they can better support faculty, provide correct information, and participate in enhancing a culture that acknowledges and accepts the importance of work-life balance and the many obligations faculty members juggle in their lives. The written comments included with the survey demonstrate the emotion and profound effect caused by lack of use and knowledge. Differences between men and women were observed regarding barriers and effects on family, but secondary analyses suggested that awareness and interest might vary by age group. More detailed study of the interrelationship among gender, career stage, age, and faculty setting (school, series of appointment) may help to elucidate barriers either in awareness or in implementation that offer the potential for targeted interventions.

Our findings can provide important insight into similar issues at other US schools of medicine. Our next steps are to implement an Accelerator Intervention in the SOM that is designed to increase awareness and use of policies. Tools will include a dedicated family-friendly policy and career flexibility brochure, a new website for the SOM linked to other relevant school and campus sites, and dedicated presentations, workshops, grand rounds, faculty meetings, internal media, and materials for new faculty orientation. In addition, we will examine the interrelationship among age, gender, and career status to identify barriers to awareness or use that may suggest targeted improvements. We will be resurveying faculty on an annual basis for a total of 3 years to assess change in awareness and use. Furthermore, we plan to examine the effect of awareness/use on merit and promotion actions and career satisfaction over a 3-year period. Lastly, we hope to explore success model(s) that define personal and professional characteristics affecting performance, awareness, use of options, and satisfaction. This will include working closely with the SOM leadership to address faculty expectations and additional improvements for fathers, singles, lesbian, bisexual, gay, and transgender (LBGT), and others. Other schools

of medicine may want to consider similar efforts in order to ensure a vibrant, productive, and satisfied faculty workforce.

### Acknowledgments

This work was supported by NIH award GM 088336 in partnership with the ORWH OWHR, with the goal of supporting Research on Causal Factors and Interventions That Promote and Support the Careers of Women in Biomedical and Behavioral Science and Engineering. This publication was also made possible by the Frances Lazda Endowment in Women's Cardiovascular Medicine to A.C.V. We thank Cris Warford, B.S., and Kellie Wheeler, B.S., for technical assistance in the conduct of these studies.

### Disclosure Statement

The authors have no conflicts of interest to report.

### References

- Beyond bias and barrier: Fulfilling the potential of women in academic science and engineering. Washington, DC: National Academy of Sciences, National Academy of Engineering, Institute of Medicine, 2007.
- Women in US academic medicine statistics. Association of American Medical Colleges. <https://www.aamc.org/members/gwims/statistics/> (accessed April, 2011).
- Nonemaker L. Women physicians in academic medicine: New insights from cohort studies. *N Engl J Med* 2000;342:399–405.
- Magrane D, Jolly P. The changing representation of men and women in academic science and engineering. Analysis in Brief, American Association of Medical Colleges. 2005;5:1–2.
- Jeffe DB, Andriole DA, Hageman HL, Whelan AJ. The changing paradigm of contemporary U.S. allopathic medical school graduates' career paths: Analysis of the 1997–2004 national AAMC Graduation Questionnaire database. *Acad Med* 2007;82:888–894.
- 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.
- 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.
- Ash AS, Carr PL, Goldstein R, Freidman RH. Compensation and advancement of women in academic medicine: Is there equity? *Ann Intern Med* 2004;141:205–212.
- Hamel MB, Ingelfinger JR, Phimiter E, Solomon CG. Women in academic medicine: Progress and challenges. *N Engl J Med* 2006;355:310–312.
- Spain D, Bianchi SM. Balancing act: Motherhood, marriage, and employment among American women. New York: Russell Sage Foundation, 1996.
- Sanberg D, Ehrhardt AA, Mellins CA, Ince SE, Meyer-Bahlburg FLH. The influence of individual and family characteristics upon career aspirations of girls during childhood and adolescence. *Sex Roles* 1987;16:649–668.
- Wolfe L, Betz NE. Traditionality of choice and sex role identification as moderators of the congruence of occupational choice in college women. *J Vocational Behav* 1981;18:43–55.
- Reid P, Paludi MA. Developmental psychology of women: Conception to adolescence. In: Denmark FL, ed. *Psychology of women: A handbook of issues and theories*. Westport, CT: Greenwood Press, 1993:193–221.
- Xie Y, Shauman KA. Modeling of sex-typing of occupational choice: Influences of occupational structure. *Sociol Methods Res* 1997;26:233–261.
- Marini M, Brinton MC. Sex typing in occupational socialization. In: Reskin B, ed. *Sex Segregation in the workplace: Trends, explanations, remedies*. Washington, DC: National Academies Press, 1984:192–232.
- Long JE. From scarcity to visibility: Gender differences in the careers of doctoral scientists and engineers. Washington, DC: National Academies Press, 2001.
- Cropsey KL, Masho SW, Shiang R, Sikka V, Kornstein SG, Hampton CL. Why do faculty leave? Reasons for attrition of women and minority faculty from a medical school: Four year results. *J Womens Health* 2008;17:1111–1118.
- Osborn EH, Ernster VL, Martin JB. Women's attitudes toward careers in academic medicine at the University of San Francisco. *Acad Med* 1992;67:59–62.
- Mason MA, Goulden M. Do babies matter (part II)? Closing the baby gap. 2004. Available at [www.aaup.org/AAUP/pubsres/academe/2004/ND/Feat/04ndmaso.htm](http://www.aaup.org/AAUP/pubsres/academe/2004/ND/Feat/04ndmaso.htm) Accessed March 22, 2011.
- Kerckhoff A. *Diverging pathways: Social structure and career deflections*. Cambridge, UK: Cambridge University Press, 1993.
- O'Rand A. Structuration and individualization: The life course as a continuous multilevel process. In: Kerckhoff AC, ed. *Generating social stratification: Toward a new research agenda*. Boulder, CO: Westview Press, 1996.
- O'Rand AM, K, ML., Concepts in the life cycle: Their history, meanings, and uses in the social sciences. *Annu Rev Sociol* 1990;16:241–262.
- Sullivan B, Hollenshead C, Smith G. Developing and implementing work-family policies for faculty. *Academe* 2004;90:24–27.
- R Development Core Team. *A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing, 2010.
- Borges NJ, Manuel RS, Elam CL, Jones BJ. Differences in motives between millennial and generation X medical students. *Med Educ* 2010;44:570–576.
- Borges NJ, Manuel RS, Elam CL, Jones BJ. Comparing millennial and generation X medical students at one medical school. *Acad Med* 2006;81:571–576.
- Howell LP, Servis G, Bonham AC. Multigenerational challenges in academic medicine. UC Davis' responses. *Acad Med* 2005;80:527–532.
- Howell LP, Joad JP, Callahan E, Servis G, Bonham AC. Generational forecasting in academic medicine: A unique method of planning for success in the next two decades. *Acad Med* 2009;84:985–993.
- American Council on Education. *Creating options: Models for flexible faculty career pathways*. An ACE-Center for Effective Leadership & Alfred P. Sloan Foundation Project. <http://www.acenet.edu/AM/Template.cfm?Section=Home&Template=/CM/HTMLDisplay.cfm&ContentID=5663> (accessed April, 2011).
- Asante EO. Managing in the generation gap. *Radiol Manage* 2001;23:48–49.
- Bickel J, Brown AJ. Generation X: Implications for faculty recruitment and development in academic health centers. *Acad Med* 2005;80:203–204.
- Clousing SL, Kurtz DL, Prendeville J, Walt JL. Generational diversity—The Nexters. *AORN J* 2003;78:373–379.
- Greene J. What nurses want: Different generations, different expectations. *Hosp Health Netw* 2005;79:34–38, 40–42.

34. Lancaster L, Stillman D. Tips on minimizing generational collisions. *Reflect Nurs Leadership* 2003;29:10–12.
35. Romanelli F, Ryan M. A survey of attitudes and beliefs of generation X pharmacy students. *Am J Pharm Educ* 2003;67:72–77.
36. Santos SR, Cox KS. Generational tension among nurses: Baby-boomers and generation X-ers: The silent treatment doesn't work. *Am J Nurs* 2002;102:11.
37. Trower CA. Making academic dentistry more attractive to new teacher-scholars. *J Dent Educ* 2007;71:601–605.
38. Leigh JP, Kravitz RL, Schembri M, Samuels SJ, Mobley S. Physician career satisfaction across specialties. *Arch Intern Med* 2008;162:1577–1584.
39. Association of American Medical Colleges. Differences in U.S. Medical School Faculty Job Satisfaction by Gender.

Analysis in brief 2008;84:8. <https://www.aamc.org/download/67970/data/aibvol8no.7.pdf> (accessed April, 2011).

Address correspondence to:  
*Amparo C. Villablanca, M.D.*  
*Professor, Cardiovascular Medicine*  
*Lazda Chair, Women's Cardiovascular Medicine*  
*University of California, Davis*  
*Division of Cardiovascular Medicine*  
*One Shields Avenue, TB 172*  
*Davis, CA 95616-8636*  
  
*E-mail: avillablanca@ucdavis.edu*