RECENT AND IMPORTANT LITERATURE RELATED TO GENDER AND STEM

Caitlin McMahon and Kyle Reeves

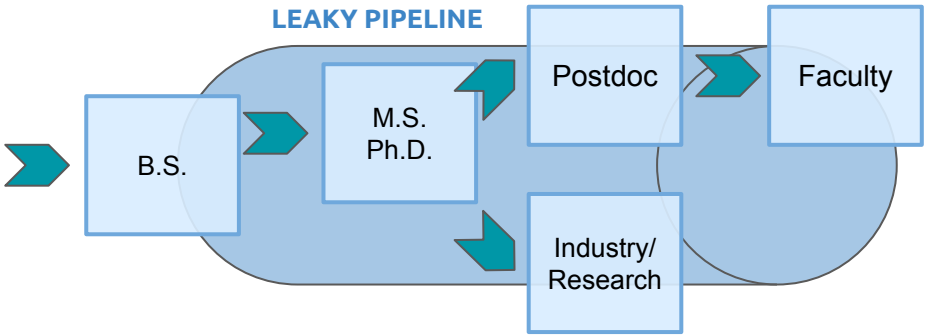
10.19.2015

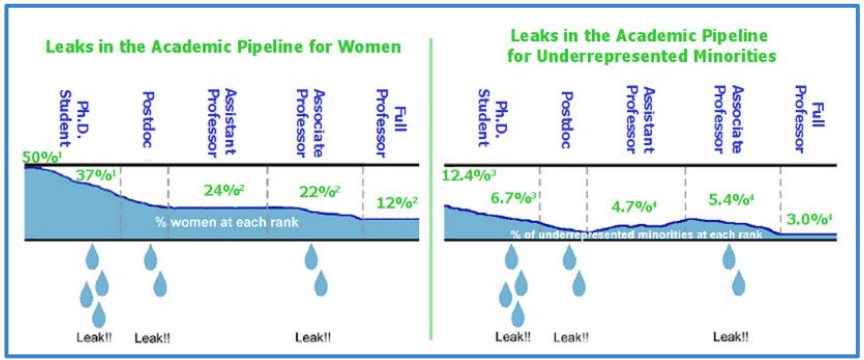
KEY CONCEPTS

STEREOTYPE THREAT - "a situational predicament in which people are or feel themselves to be at **risk of confirming negative stereotypes** about their social group"

IMPOSTER SYNDROME - "a collection of **feelings of inadequacy** that persist even in face of information that indicates that the **opposite is true**"

IMPLICIT BIAS - "the bias in judgment and/or behavior that results from subtle cognitive processes (e.g., implicit attitudes and implicit stereotypes) that often operate at a **level below conscious awareness and without intentional control**"



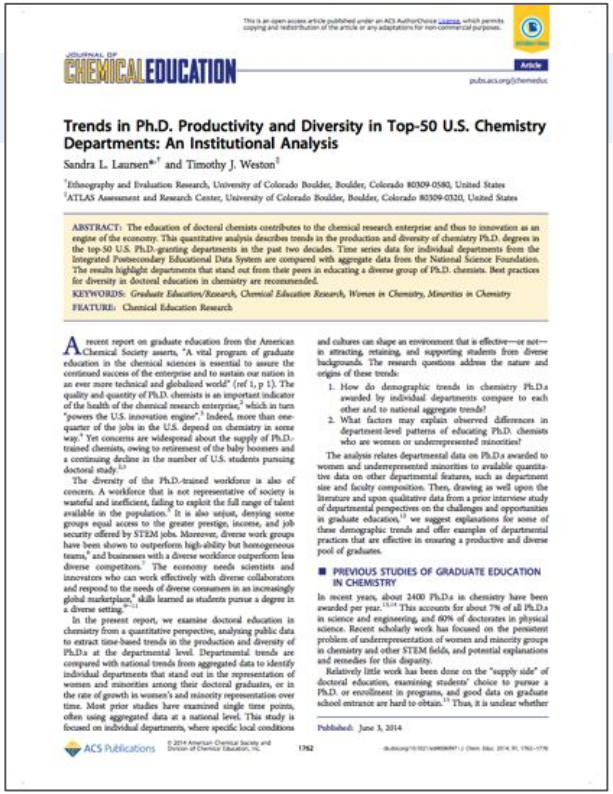


http://sitemaker.umich.edu/diversitysummit2010/motivation

REPRESENTATION

Diversity in Top-50 US Chemistry Departments (*2014*)

- Who is present? Who is not? How do these trends compare to national trends?
- What are the factors that explain differences in departmental-level patterns?



JOURNAL OF CHEMICAL EDUCATION

Article

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Trends in Ph.D. Productivity and Diversity in Top-50 U.S. Chemistry Departments: An Institutional Analysis

Sandra L. Laursen*[†] and Timothy J. Weston[‡]

[†]Ethnography and Evaluation Research, University of Colorado Boulder, Boulder, Colorado 80309-0580, United States

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ABSTRACT: The education of doctoral chemists contributes to the chemical research enterprise and thus to innovation as an engine of the economy. This quantitative analysis describes trends in the production and diversity of chemistry Ph.D. degrees in the top-50 U.S. Ph.D.-granting departments in the past two decades. Time series data for individual departments from the Integrated Postsecondary Educational Data System are compared with aggregate data from the National Science Foundation. The results highlight departments that stand out from their peers in educating a diverse group of Ph.D. chemists. Best practices for diversity in doctoral education in chemistry are recommended.

KEYWORDS: *Graduate Education/Research, Chemical Education Research, Women in Chemistry, Minorities in Chemistry*

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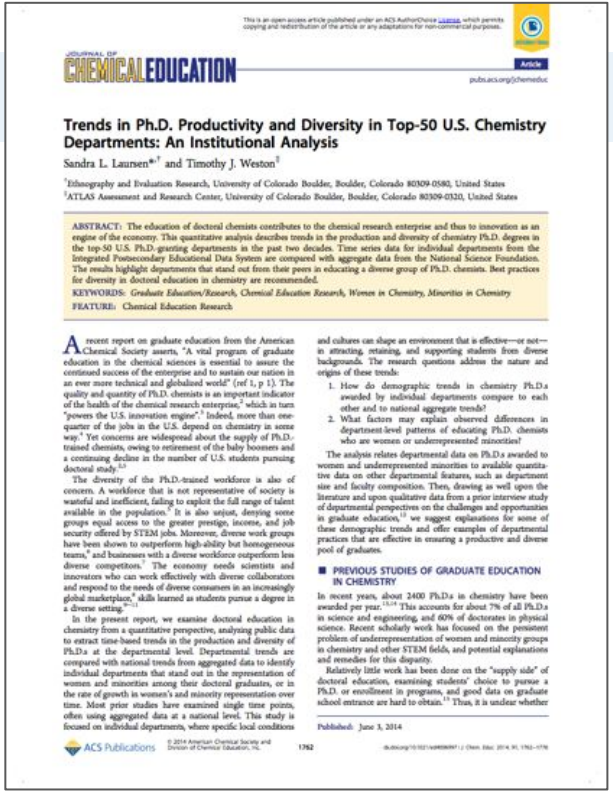
Diversity in Top-50 US Chemistry Departments (*2014*)

Methods

- “Top 50” Chemistry Doctoral Programs (US News, 2007 and National Research Council 1995)
- These institutions account for 60% of chemistry Ph.D.s each year
- Degree data from Integrated Postsecondary Educational Data System (U.S. Department of Education) - 1987-2009
- Faculty data from Nelson Diversity Surveys



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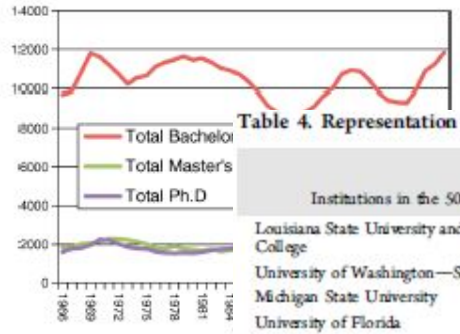

Figure 2. Total chemistry degrees

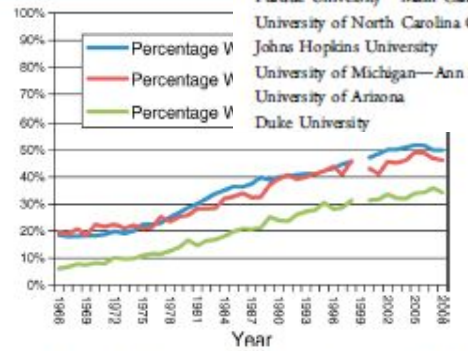

Figure 3. Percentage of women receiving chemistry degrees (1966–1998, 2000–2008), from national data.

Table 4. Representation and Growth in Ph.D. Degrees Granted to Women

Institutions in the 50-School Data Set	Ph.D. Degrees to Women (2005–2009), %	Rank in Percentage Women	Growth in Degrees Granted to Women (1987–2009), %	Rank in Percentage Growth in Women Students (1–50)
Louisiana State University and Agricultural & Mechanical College	49	1	23	7
University of Washington—Seattle Campus	47	2	30	1
Michigan State University	47	2	29	2
University of Florida	45	4	27	4
Emory University	44	5	10	34
Georgia Institute of Technology—Main Campus	41	6	20	10
Purdue University—Main Campus	40	7	15	24
University of North Carolina Chapel Hill	40	7	11	33
Johns Hopkins University	40	7	4	47
University of Michigan—Ann Arbor	39%	10	20	10
University of Arizona	39	10	17	18
Duke University	39	10	15	24

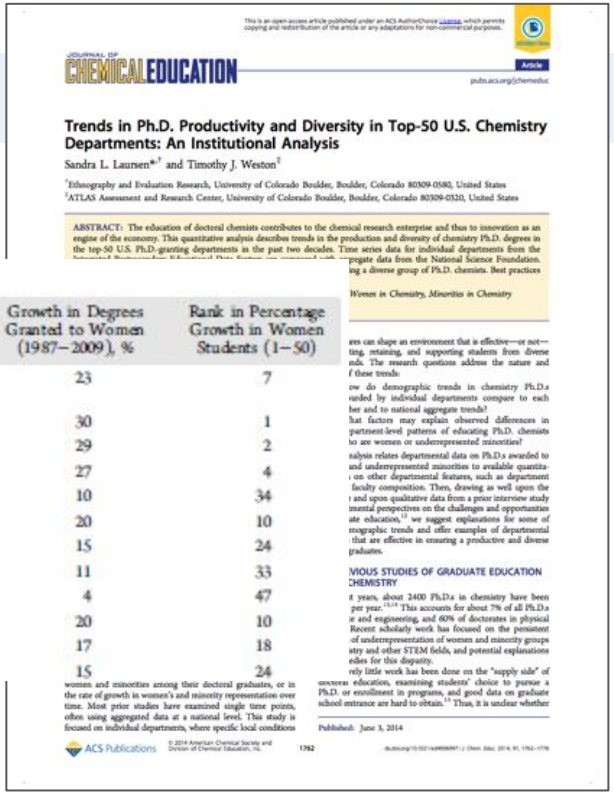

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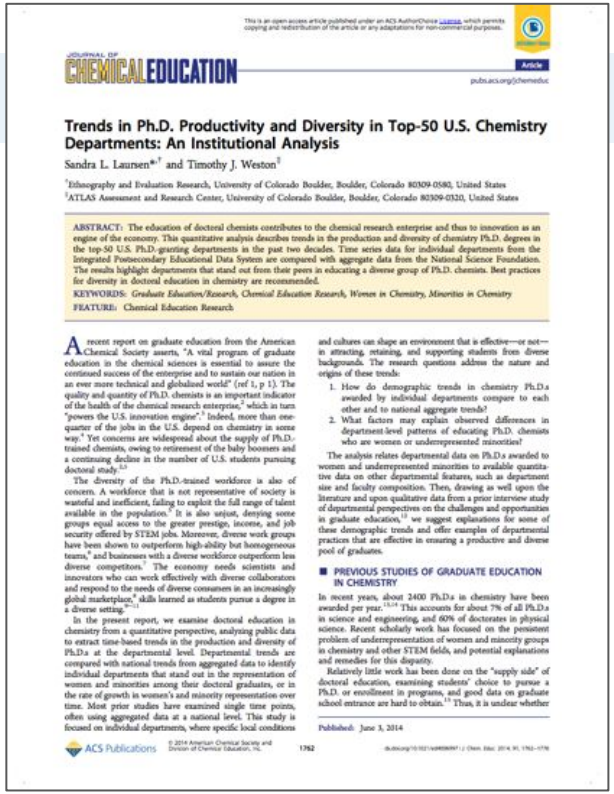
Table 6. Percentages of Chemistry Ph.D.s Granted, by Racial/Ethnic Group (2005–2009)[a]

Racial/Ethnic Group	Mean
White	51%
African-American	2%
Hispanic	3%
Native American	>1%
Nonresident	37%
Asian	7%

[a]Totals reflect percentage of all students with those of unknown ethnicity removed.

	2005–2009								1995–2009	
Institution[a]	White, %	African-American, %	Hispanic, %	Native American, %	Nonresident, %	Asian, %	URM, %	Rank for URM	Growth URM, %	Rank for Growth URM
Harvard University	56	1	8	0	32	4	9	5	6	10
University of California—Santa Barbara	51	3	6	0	24	16	9	5	2	19
Texas A & M University	41	3	5	1	43	8	9	5	−7	47
University of California—Berkeley	66	2	4	2	15	12	8	10	7	6
Rice University	44	1	7	0	39	9	8	10	4	14
University of Virginia—Main Campus	70	4	3	0	22	2	7	12	7	6
Washington University in St. Louis	37	7	0	0	57	0	7	12	7	6
University of Florida	39	4	3	0	50	4	7	12	2	19
Johns Hopkins University	45	3	2	2	46	3	7	12	−1	34
Georgia Institute of Technology—Main Campus	52	4	3	0	39	2	7	12	−13	49
Colorado State University	61	0	5	1	28	4	6	17	4	14
University of California—Davis	43	3	3	0	44	7	6	17	1	24
University of North Carolina at Chapel Hill	72	2	4	0	18	4	6	17	0	29
Massachusetts Institute of Technology	5%	3	2	0	35	8	5	20	5	11
University of Washington—Seattle Campus	62	1	4	0	24	9	5	20	5	11
California Institute of Technology	66	2	3	0	14	15	5	20	4	14
Pennsylvania State University—Main Campus	68	3	2	0	22	5	5	20	4	14
Ohio State University—Main Campus	44	1	3	1	49	2	5	20	3	18



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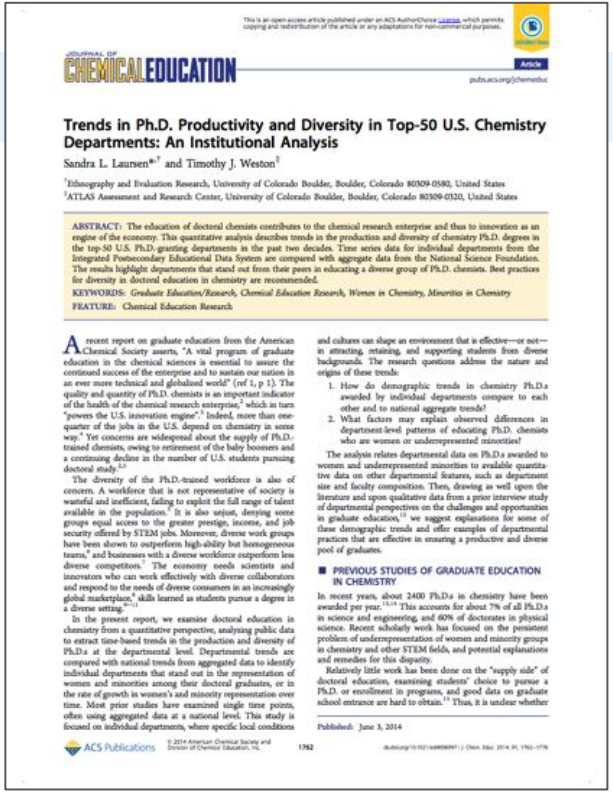
Diversity in Top-50 US Chemistry Departments (*2014*)

- What are the factors that explain differences in departmental-level patterns?
  - ❖ Women concentrate in less prestigious institutions?
  - ❖ Correlation with women faculty?
    - ➢ Unable to find significant statistical relationship - all departments below “critical mass”
  - ❖ Departments with high minority representation had high minority growth
    - ➢ Insititutions actively worked in increase representation
    - ➢ High success departments had explicit statements and plans relating to diversity



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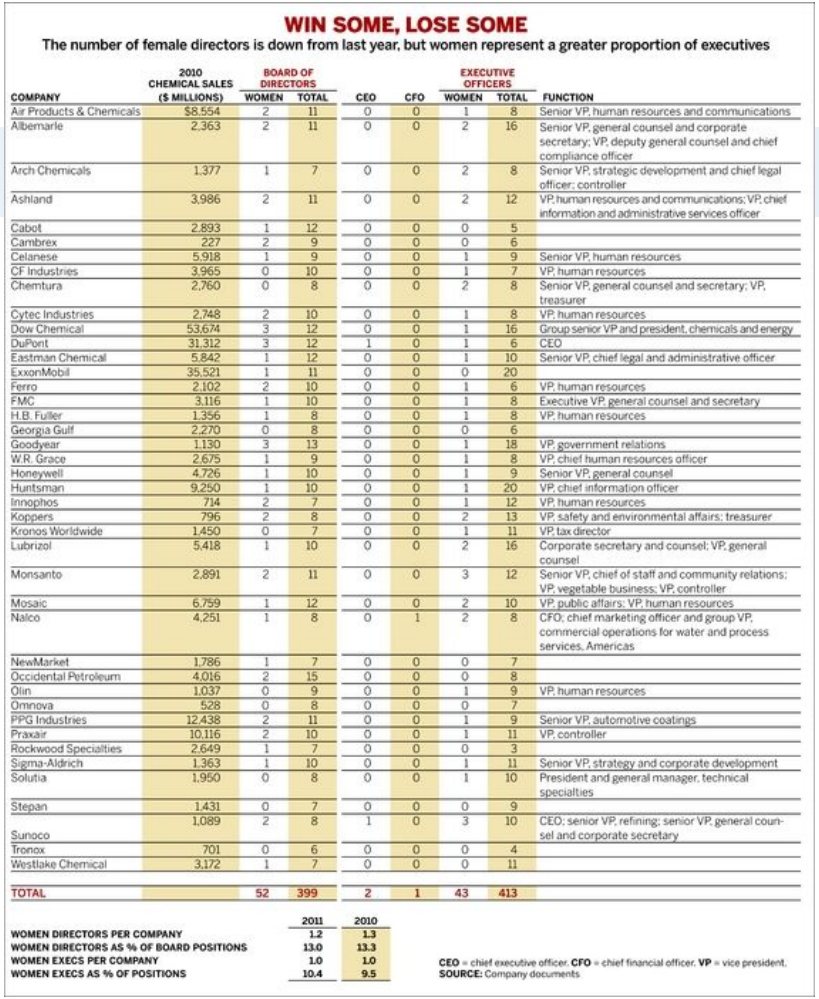
Women in Industry - C&EN (2011)



WIN SOME, LOSE SOME

The number of female directors is down from last year, but women represent a greater proportion of executives

COMPANY	2010 CHEMICAL SALES ($ MILLIONS)	BOARD OF DIRECTORS WOMEN	BOARD OF DIRECTORS TOTAL	CEO	CFO	EXECUTIVE OFFICERS WOMEN	EXECUTIVE OFFICERS TOTAL	FUNCTION
Air Products & Chemicals	$8,554	2	11	0	0	1	8	Senior VP, human resources and communications
Albemarle	2,363	2	11	0	0	2	16	Senior VP, general counsel and corporate secretary; VP, deputy general counsel and chief compliance officer
Arch Chemicals	1,377	1	7	0	0	2	8	Senior VP, strategic development and chief legal officer; controller
Ashland	3,986	2	11	0	0	2	12	VP, human resources and communications; VP, chief information and administrative services officer
Cabot	2,893	1	12	0	0	0	5	
Cambrex	227	2	9	0	0	0	6	
Celanese	5,918	1	9	0	0	1	9	Senior VP, human resources
CF Industries	3,965	0	10	0	0	1	7	VP, human resources
Chemtura	2,760	0	8	0	0	2	8	Senior VP, general counsel and secretary; VP, treasurer
Cytec Industries	2,748	2	10	0	0	1	8	VP, human resources
Dow Chemical	53,674	3	12	0	0	1	16	Group senior VP and president, chemicals and energy
DuPont	31,312	3	12	1	0	1	6	CEO
Eastman Chemical	5,842	1	12	0	0	1	10	Senior VP, chief legal and administrative officer
ExxonMobil	35,521	1	11	0	0	0	20	
Ferro	2,102	2	10	0	0	1	6	VP, human resources
FMC	3,116	1	10	0	0	1	8	Executive VP, general counsel and secretary
H.B. Fuller	1,356	1	8	0	0	1	8	VP, human resources
Georgia Gulf	2,270	0	8	0	0	0	6	
Goodyear	1,130	3	13	0	0	1	18	VP, government relations
W.R. Grace	2,675	1	9	0	0	1	8	VP, chief human resources officer
Honeywell	4,726	1	10	0	0	1	9	Senior VP, general counsel
Huntsman	9,250	1	10	0	0	1	20	VP, chief information officer
Innophos	714	2	7	0	0	1	12	VP, human resources
Koppers	796	2	8	0	0	2	13	VP, safety and environmental affairs; treasurer
Kronos Worldwide	1,450	0	7	0	0	1	11	VP, tax director
Lubrizol	5,418	1	10	0	0	2	16	Corporate secretary and counsel; VP, general counsel
Monsanto	2,891	2	11	0	0	3	12	Senior VP, chief of staff and community relations; VP, vegetable business; VP, controller
Mosaic	6,759	1	12	0	0	2	10	VP, public affairs; VP, human resources
Nalco	4,251	1	8	0	1	2	8	CFO; chief marketing officer and group VP, commercial operations for water and process services, Americas
NewMarket	1,786	1	7	0	0	0	7	
Occidental Petroleum	4,016	2	15	0	0	0	8	
Olin	1,037	0	9	0	0	1	9	VP, human resources
Omnova	528	0	8	0	0	0	7	
PPG Industries	12,438	2	11	0	0	1	9	Senior VP, automotive coatings
Praxair	10,116	2	10	0	0	1	11	VP, controller
Rockwood Specialties	2,649	1	7	0	0	0	3	
Sigma-Aldrich	1,363	1	10	0	0	1	11	Senior VP, strategy and corporate development
Solutia	1,950	0	8	0	0	1	10	President and general manager, technical specialties
Stepan	1,431	0	7	0	0	0	9	
Sunoco	1,089	2	8	1	0	3	10	CEO; senior VP, refining; senior VP, general counsel and corporate secretary
Tronox	701	0	6	0	0	0	4	
Westlake Chemical	3,172	1	7	0	0	0	11	
TOTAL		52	399	2	1	43	413	

	2011	2010
WOMEN DIRECTORS PER COMPANY	1.2	1.3
WOMEN DIRECTORS AS % OF BOARD POSITIONS	13.0	13.3
WOMEN EXECS PER COMPANY	1.0	1.0
WOMEN EXECS AS % OF POSITIONS	10.4	9.5

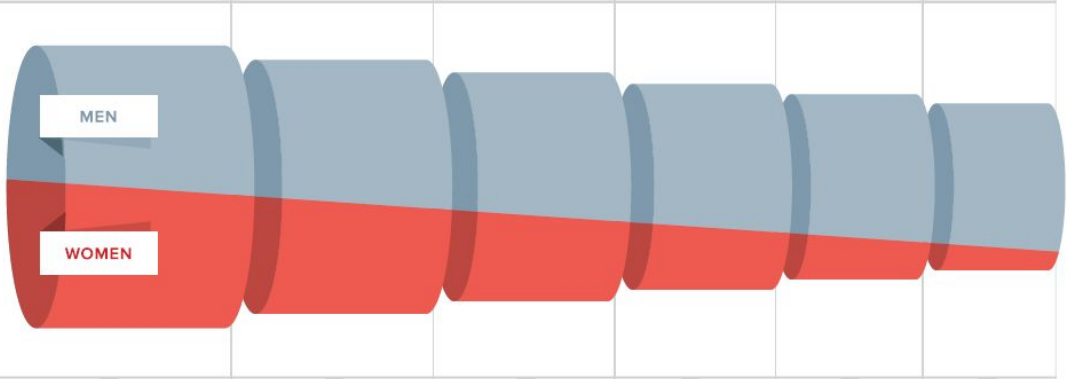
CEO = chief executive officer. **CFO** = chief financial officer. **VP** = vice president.
SOURCE: Company documents

Women in the Workplace (*2015*)

GENDER REPRESENTATION IN THE CORPORATE PIPELINE

WOMEN MEN

% OF WOMEN AND MEN BY LEVEL



	ENTRY LEVEL PROFESSIONAL	MANAGER	SENIOR MANAGER / DIRECTOR	VP	SVP	C-SUITE
2012 PIPELINE % WOMEN	42%	33%	28%	23%	20%	16%
2015 PIPELINE % WOMEN	45%	37%	32%	27%	23%	17%

Women in the Workplace 2015

LEAN IN McKinsey&Company

Women in the Workplace (*2015*)

Women in the Workplace 2015

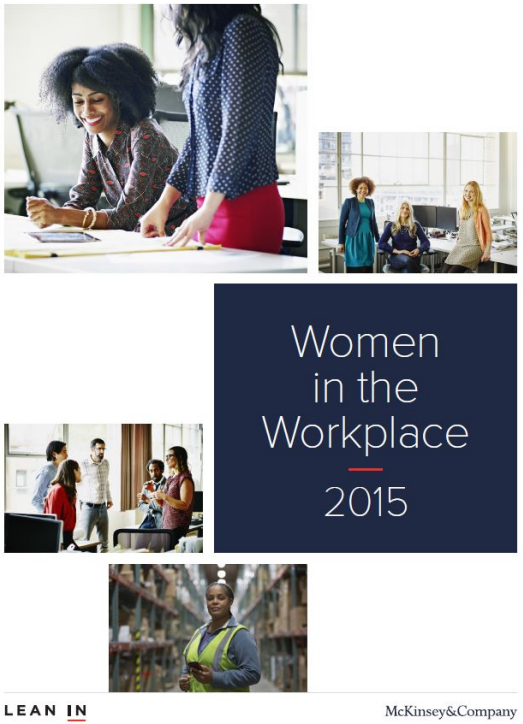
LEAN IN

McKinsey&Company

Women in the Workplace (*2015*)

Roadmap to Gender Equality:

- Track key metrics so you understand the problem
- Demonstrate that gender diversity is a top priority
- Identify and interrupt gender bias
  - Likeability
  - Performance evaluation
  - Performance attribution
  - Maternal
- Rethink work
- Create a level playing field
- Create a virtuous cycle of female leadership



HIRING TRENDS AND GENDER BIAS

GENDER BIAS IN STEM FAVORS MALE STUDENTS (*2012*)

"The present study sought to test for differences in faculty perceptions and treatment of equally qualified men and women pursuing careers in science and, if such a bias were discovered, reveal its mechanisms and consequences within academic science."

PNAS PNAS PNAS

Science faculty's subtle gender biases favor male students

Corinne A. Moss-Racusin[a,b], John F. Dovidio[b], Victoria L. Brescoll[c], Mark J. Graham[a,d], and Jo Handelsman[a,1]

[a]Department of Molecular, Cellular and Developmental Biology, [b]Department of Psychology, [c]School of Management, and [d]Department of Psychiatry, Yale University, New Haven, CT 06520

Edited* by Shirley Tilghman, Princeton University, Princeton, NJ, and approved August 21, 2012 (received for review July 2, 2012)

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diversity | lifestyle choices | science education | science workforce

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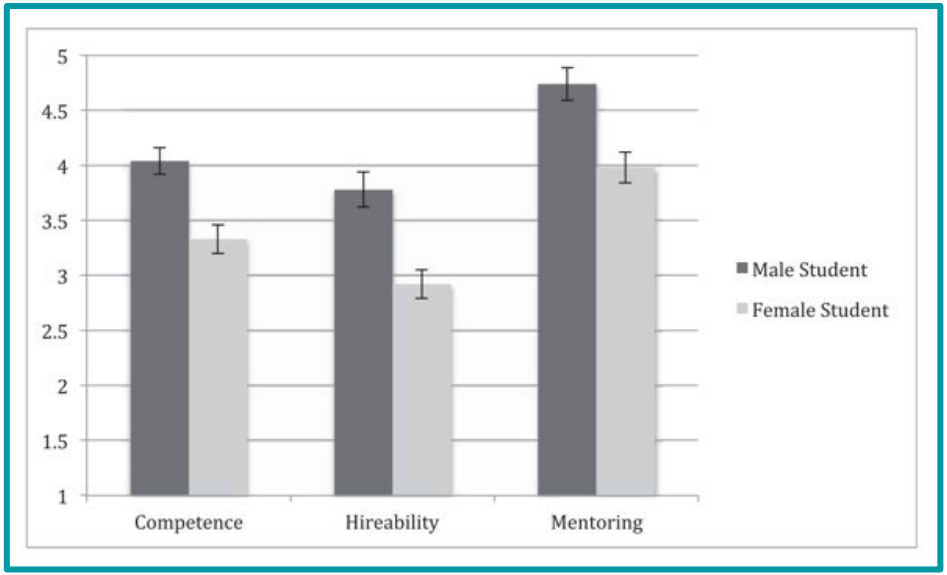
THE STUDY

Request 127 STEM (chemistry, biology, and physics) faculty to evaluate applications for a lab manager position. Their evaluation results in:

1) Perceived student **competence**
2) Offered **starting salary**
3) Deserving of **mentorship**

GENDER BIAS IN STEM FAVORS MALE STUDENTS (*2012*)



PNAS PNAS PNAS

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diversity | lifestyle choices | science education | science workforce

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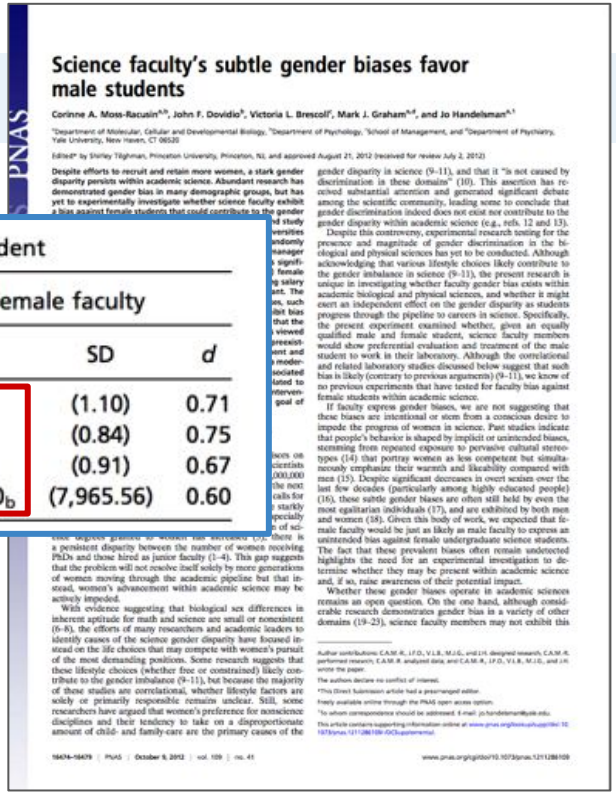
GENDER BIAS IN STEM FAVORS MALE STUDENTS (*2012*)

	Male target student				Female target student				
	Male faculty		Female faculty		Male faculty		Female faculty		
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	*d*
Competence	4.01_a	(0.92)	4.1_a	(1.19)	3.33_b	(1.07)	3.32_b	(1.10)	0.71
Hireability	3.74_a	(1.24)	3.92_a	(1.27)	2.96_b	(1.13)	2.84_b	(0.84)	0.75
Mentoring	4.74_a	(1.11)	4.73_a	(1.31)	4.00_b	(1.21)	3.91_b	(0.91)	0.67
Salary	$30,520.83_a$	(5,764.86)	$29,333.33_a$	(4,952.15)	$27,111,11_b$	(6,948.58)	$25,000.00_b$	(7,965.56)	0.60



PNAS

Science faculty's subtle gender biases favor male students

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Gender Bias?

Male faculty ✓

Female faculty ✓ ← Bias may be **stronger**.

GENDER BIAS IN STEM FAVORS MALE STUDENTS (*2012*)

BUT WHY?

Concurrent with this study, participants were rated based on the Modern Sexism Scale[1], used to measure **implicit bias**.

"Results of multiple regression analyses indicated that participants' **preexisting subtle bias against women significantly interacted with student gender** to predict perceptions of student composite competence (β = −0.39, P < 0.01), hireability (β = −0.31, P < 0.05), and **mentoring (β = −0.55, P < 0.001)**."

Access to mentoring very sensitive to individual's unconscious biases.

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16474–16479 | PNAS | October 9, 2012 | vol. 109 | no. 41

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[1] Swim JK, Aikin KJ, Hall WS, Hunter BA (1995) Sexism and racism: Old-fashioned and modern prejudices. J Pers Soc Psychol 68:199–214

GENDER BIAS IN STEM FAVORS MALE STUDENTS (*2012*)

AND IT ISN'T BECAUSE A FEW PARTICIPANTS JUST DON'T LIKE WOMEN...

In keeping with a large body of literature (15), faculty participants reported **liking the female** (mean = 4.35, SD = 0.93) **more than the male student** [(mean = 3.91, SD = 0.1.08), t(125) = −2.44, P < 0.05]. However, consistent with this previous literature, **liking the female student more than the male student did not translate into positive perceptions of her composite competence or material outcomes in the form of a job offer, an equitable salary, or valuable career mentoring**

PNAS PNAS PNAS

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diversity | lifestyle choices | science education | science workforce

A 2012 report from the President's Council of Advisors on Science and Technology indicates that training scientists and engineers at current rates will result in a deficit of 1,000,000 workers to meet United States workforce demands over the next decade (1). To help close this formidable gap, the report calls for the increased training and retention of women, who are starkly underrepresented within many fields of science, especially among the professoriate (2–4). Although the proportion of science degrees granted to women has increased (5), there is a persistent disparity between the number of women receiving PhDs and those hired as junior faculty (1–4). This gap suggests that the problem will not resolve itself solely by more generations of women moving through the academic pipeline but that instead, women's advancement within academic science may be actively impeded.

With evidence suggesting that biological sex differences in inherent aptitude for math and science are small or nonexistent (6–8), the efforts of many researchers and academic leaders to identify causes of the science gender disparity have focused instead on the life choices that may compete with women's pursuit of the most demanding positions. Some research suggests that these lifestyle choices (whether free or constrained) likely contribute to the gender imbalance (9–11), but because the majority of these studies are correlational, whether lifestyle factors are solely or primarily responsible remains unclear. Still, some researchers have argued that women's preference for nonscience disciplines and their tendency to take on a disproportionate amount of child- and family-care are the primary causes of the gender disparity in science (9–11), and that it "is not caused by discrimination in these domains" (10). This assertion has received substantial attention and generated significant debate among the scientific community, leading some to conclude that gender discrimination indeed does not exist nor contribute to the gender disparity within academic science (e.g., refs. 12 and 13).

Despite this controversy, experimental research testing for the presence and magnitude of gender discrimination in the biological and physical sciences has yet to be conducted. Although acknowledging that various lifestyle choices likely contribute to the gender imbalance in science (9–11), the present research is unique in investigating whether faculty gender bias exists within academic biological and physical sciences, and whether it might exert an independent effect on the gender disparity as students progress through the pipeline to careers in science. Specifically, the present experiment examined whether, given an equally qualified male and female student, science faculty members would show preferential evaluation and treatment of the male student to work in their laboratory. Although the correlational and related laboratory studies discussed below suggest that such bias is likely (contrary to previous arguments) (9–11), we know of no previous experiments that have tested for faculty bias against female students within academic science.

If faculty express gender biases, we are not suggesting that these biases are intentional or stem from a conscious desire to impede the progress of women in science. Past studies indicate that people's behavior is shaped by implicit or unintended biases, stemming from repeated exposure to pervasive cultural stereotypes (14) that portray women as less competent but simultaneously emphasize their warmth and likeability compared with men (15). Despite significant decreases in overt sexism over the last few decades (particularly among highly educated people) (16), these subtle gender biases are often still held by even the most egalitarian individuals (17), and are exhibited by both men and women (18). Given this body of work, we expected that female faculty would be just as likely as male faculty to express an unintended bias against female undergraduate science students. The fact that these prevalent biases often remain undetected highlights the need for an experimental investigation to determine whether they may be present within academic science and, if so, raise awareness of their potential impact.

Whether these gender biases operate in academic sciences remains an open question. On the one hand, although considerable research demonstrates gender bias in a variety of other domains (19–23), science faculty members may not exhibit this

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GENDER BIAS IN STEM FAVORS MALE STUDENTS (*2012*)

CONCLUSIONS

- **Both** male and female faculty we shown to have a bias in favor of male applicants.
- Female applicants are **perceived to be less competent**.
- Female applicants were offered **a lower starting salary** (by as much as $15,000), and less likely likely to receive mentorship if hired.

Science faculty's subtle gender biases favor male students

Corinne A. Moss-Racusin[a,b], John F. Dovidio[b], Victoria L. Brescoll[c], Mark J. Graham[a,d], and Jo Handelsman[a,1]

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Edited* by Shirley Tilghman, Princeton University, Princeton, NJ, and approved August 21, 2012 (received for review July 2, 2012)

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2:1 FACULTY PREFERENCE FOR WOMEN IN STEM (*2015*)

There remains a gap between %women PhD recipients and % women in assistant professorships in nearly every STEM discipline (especially in math-intensive fields).

> This winnowing of women in the STEM (science, technology, engineering, mathematics) tenure-track pipeline is a result of **women Ph.D.s being far less likely than men to apply for tenure-track jobs**, rather than to women applying but being rejected at higher rates than men (14).

THE STUDY

Request 873 tenure-track STEM (371 institutions throughout all 50 states) faculty to evaluate applications for a tenure-track faculty position.

National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track

Wendy M. Williams[1] and Stephen J. Ceci

Department of Human Development, Cornell University, Ithaca, NY 14853

Edited* by Richard E. Nisbett, University of Michigan, Ann Arbor, MI, and approved March 5, 2015 (received for review September 30, 2014)

National randomized experiments and validation studies were conducted on 873 tenure-track faculty (439 male, 434 female) from biology, engineering, economics, and psychology at 371 universities/colleges from 50 US states and the District of Columbia. In the main experiment, 363 faculty members evaluated narrative summaries describing hypothetical female and male applicants for tenure-track assistant professorships who shared the same lifestyle (e.g., single without children, married with children). Applicants' profiles were systematically varied to disguise identically rated scholarship; profiles were counterbalanced by gender across faculty to enable between-faculty comparisons of hiring preferences for identically qualified women versus men. Results revealed a 2:1 preference for women by faculty of both genders across both math-intensive and non-math-intensive fields, with the single exception of male economists, who showed no gender preference. Results were replicated using weighted analyses to control for national sample characteristics. In follow-up experiments, 144 faculty evaluated competing applicants with differing lifestyles (e.g., divorced mother vs. married father), and 204 faculty compared same-gender candidates with children, but differing in whether they took 1-y parental leaves in graduate school. Women preferred divorced mothers to married fathers; men preferred mothers who took leaves to mothers who did not. In two validation studies, 35 engineering faculty provided rankings using full curricula vitae instead of narratives, and 127 faculty rated one applicant rather than choosing from a mixed-gender group; the same preference for women was shown by faculty of both genders. These results suggest it is a propitious time for women launching careers in academic science. Messages to the contrary may discourage women from applying for STEM (science, technology, engineering, mathematics) tenure-track assistant professorships.

gender bias | hiring bias | underrepresentation of women | faculty hiring | women in science

Women considering careers in academic science confront stark portrayals of the treacherous journey to becoming professors. Well-publicized research depicts a thicket of obstacles standing between female graduate students and tenure-track positions, including inadequate mentoring and networking (1); a chilly social climate (2); downgrading of work products such as manuscripts (3), grant proposals (4), and lectures (5); and gender bias in interviewing and hiring (6–9). Numerous blue ribbon panels and national reports have concluded that implicit, and sometimes explicit, attitudes pervade the hiring process and negatively influence evaluations of female candidates and their scholarship, contributing to women's underrepresentation within the academy (e.g., refs. 10–13).

Women's underrepresentation in academic science is hardly trivial. In life and social sciences, women now earn the majority of doctorates, but they make up a minority of assistant professors. In 1995–1995, 28.4% of assistant professors were women, but 41.6% of Ph.D.s awarded in the same cohort went to women. That is, almost one-third of the women did not advance from receiving their Ph.D. to an assistant professorship (see ref. 14, figure 5). More recently, in 2008–2010, this gap widened to 22 percentage points (53.2% of doctorates to women; 31.6% of assistant professorships to women), and this gap persisted after controlling for demographics, degree characteristics, and field (15). [This winnowing of women in the STEM (science, technology, engineering, mathematics) tenure-track pipeline is a result of women Ph.D.s being far less likely than men to apply for tenure-track jobs, rather than to women applying but being rejected at higher rates than men (14).] Against this bleak backdrop, it is perhaps no surprise that talented young women opt out of the STEM tenure track either by not applying for assistant professorships at the same rate as men or, in some fields, by not majoring in them in college in the first place (14).

The point at which scientists choose to apply for tenure-track assistant professorships is a key juncture in understanding the problem of women's underrepresentation. Once hired, women prosper in the STEM professoriate (14, 16–18): They are remunerated, persist, and are promoted at rates roughly comparable to men's (14) after controlling for observable characteristics, including academic productivity. However, to be hired and eventually tenured, women must first apply. Unfortunately, despite their success once hired, women apply for tenure-track positions in far smaller percentages than their male graduate student counterparts (14, 16, 18). Why might this be?

One reason may be omnipresent discouraging messages about sexism in hiring, but does current evidence support such messages? Despite this question's centrality to any informed discussion about women's underrepresentation in academic science, only one experimental study (7) contrasted faculty ratings of the relative "hirability" of hypothetical identically qualified women and men. Results showed that both female and male psychology faculty members downgraded a hypothetical woman's academic record compared with an identical man's. However, this study

Significance

The underrepresentation of women in academic science is typically attributed, both in scientific literature and in the media, to sexist hiring. Here we report five hiring experiments in which faculty evaluated hypothetical female and male applicants, using systematically varied profiles disguising identical scholarship, for assistant professorships in biology, engineering, economics, and psychology. Contrary to prevailing assumptions, men and women faculty members from all four fields preferred female applicants 2:1 over identically qualified males with matching lifestyles (single, married, divorced), with the exception of male economists, who showed no gender preference. Comparing different lifestyles revealed that women preferred divorced mothers to married fathers and that men preferred mothers who took parental leaves to mothers who did not. Our findings, supported by real-world academic hiring data, suggest advantages for women launching academic science careers.

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[14] Ceci SJ, Ginther DK, Kahn S, Williams WM (2014) Women in academic science: A changing landscape. Psychol Sci Publ Interest 15(3):75–141

2:1 FACULTY PREFERENCE FOR WOMEN IN STEM (*2015*)

THE EXPERIMENTS

‘Candidate Lifestyle’

Experiment 1 - unmarried, childless (narrative summaries)

Experiment 2 - a) married father, two kids stay-at-home partner
b) single mother, two kids

‘Fertility Decisions’

Experiment 3 - Identical fathers/mothers who took or did not take 1-yr parental leave.

Verifying Soundness of Study

Experiment 4 - unmarried, childless (full CV)

Experiment 5 - evaluation of only one application to avoid socially-desirable responses.

PNAS

National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track

Wendy M. Williams[1] and Stephen J. Ceci

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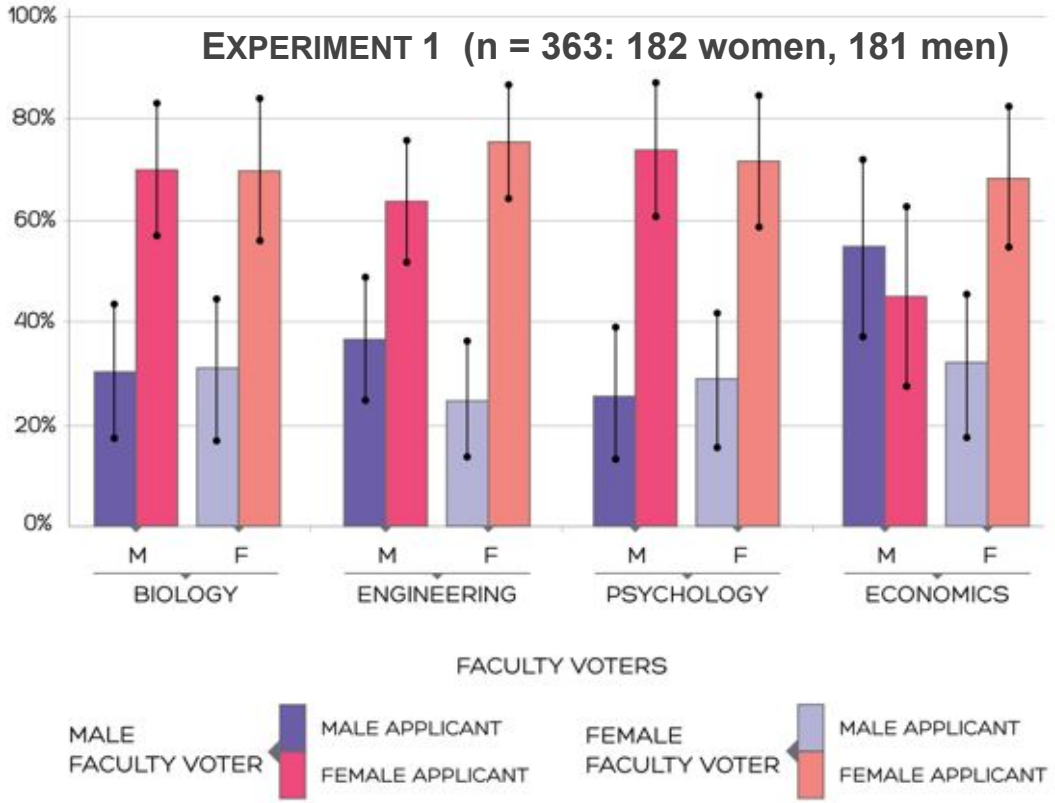
2:1 FACULTY PREFERENCE FOR WOMEN IN STEM (*2015*)



PNAS

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National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track

Wendy M. Williams[1] and Stephen J. Ceci

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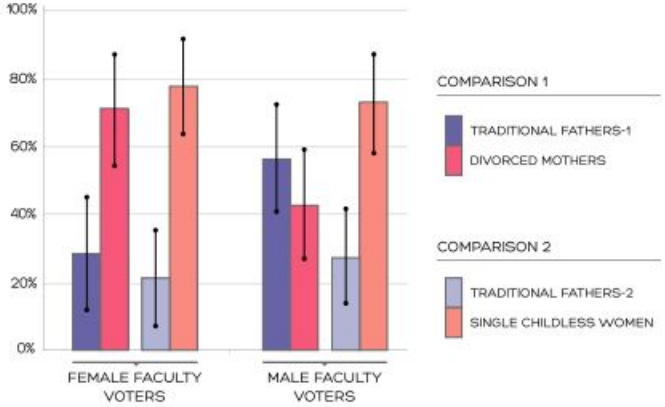
2:1 FACULTY PREFERENCE FOR WOMEN IN STEM (*2015*)

EXPERIMENT 2 (n = 144: 64 women, 80 men)

Where are the traditional mothers?



EXPERIMENT 3 (n = 204: 109 women, 95 men)

Taking parental leave during graduate school (preferences)

	Male Applicants	Female Applicants
Male Faculty	**No preference**	**2:1 to take leave**
Female Faculty	**No preference**	**1.6:1 to <u>not</u> take leave**

CrossMark

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2:1 FACULTY PREFERENCE FOR WOMEN IN STEM (*2015*)

EXPERIMENT 5 (n = 127: 63 women, 64 men - 82 institutions)

Rank a single candidate.
(Attempt to avoid socially-desirable responses.)

1 *cannot support* ⟷ **10** *truly extraordinary/ exceptional*

Two-way ANOVA

- Women ranked one scale point higher than identical men.

CrossMark

National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track

Wendy M. Williams[1] and Stephen J. Ceci

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CONCLUSIONS

- Conclusions are valid for discrimination/bias at the point of hiring (interview not included).
- “Our experimental findings do not support omnipresent societal messages regarding the current inhospitability of the STEM professoriate for women at the point of applying for assistant professorships”
- Disparity stems from **supply** rather than demand. (e.g. Number of applications versus number of hires.)

How do the two articles relate to one another? Is there a conflict or are the just asking different questions?

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EQUALITY VS. EQUITY

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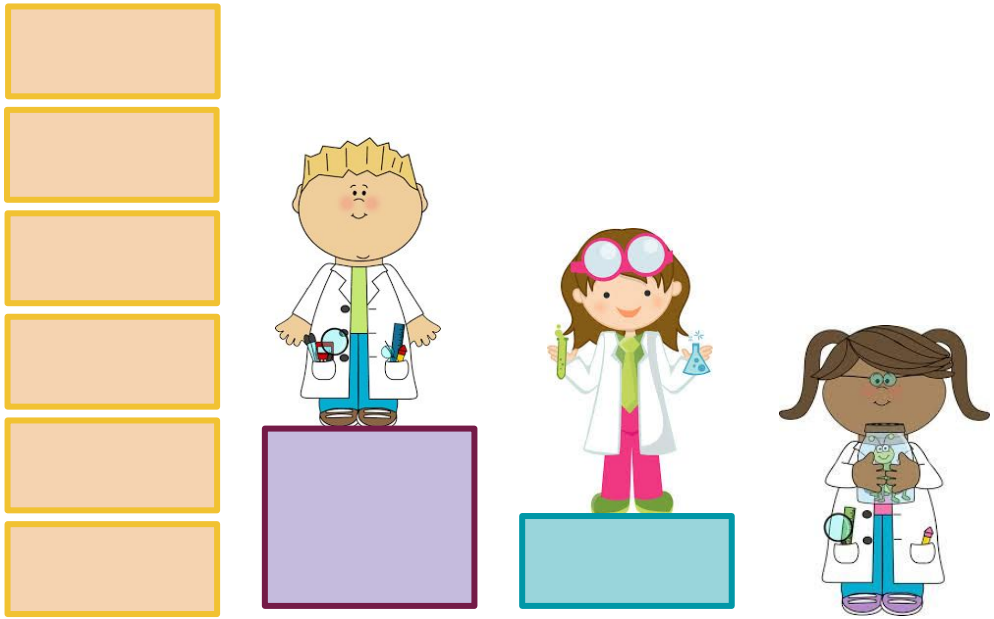

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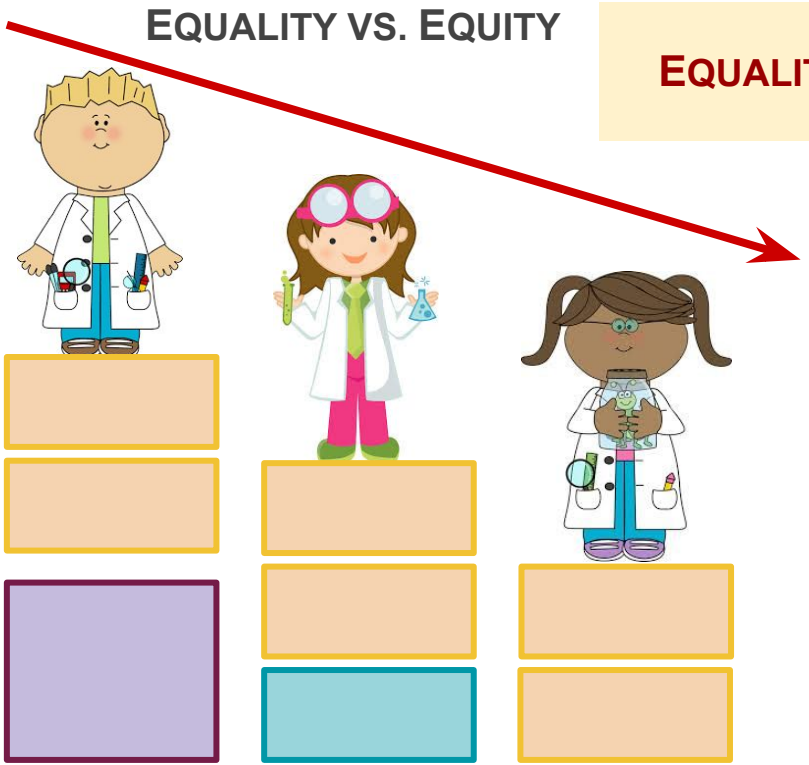

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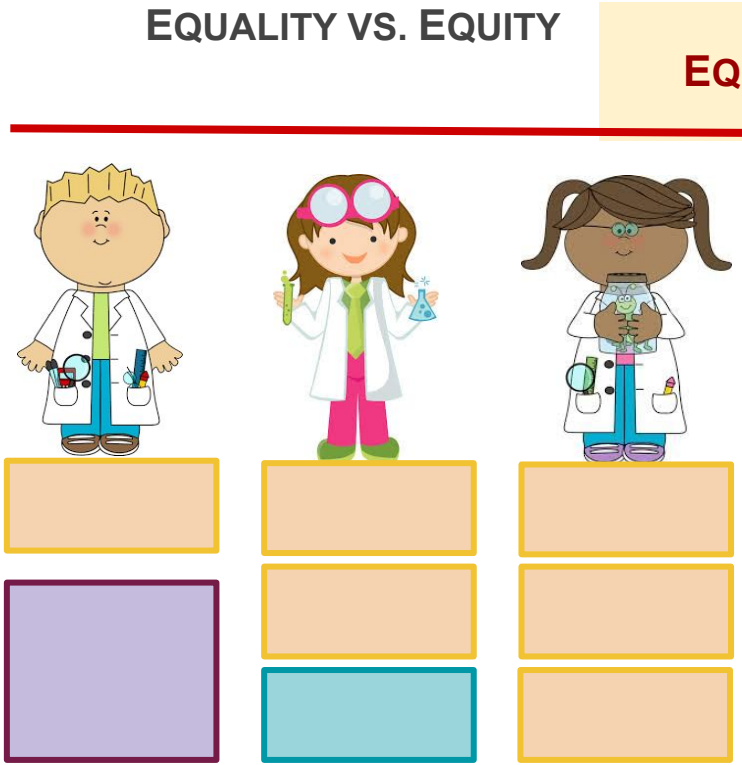

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