



Women in Medicine and Biomedical Research

Health Research Alliance 3-31-16

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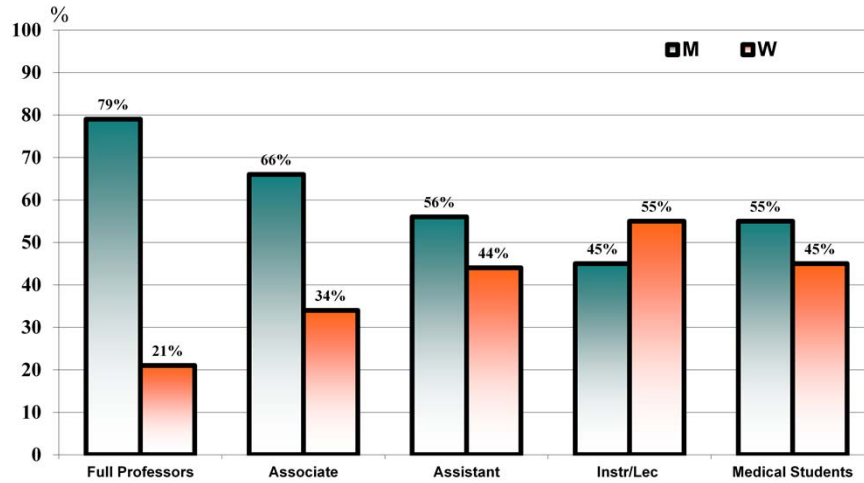


Overview

- What the data show
- Causal factors
- NIH-TAC Trial
- Pathways Program for STEM faculty
- Discussion

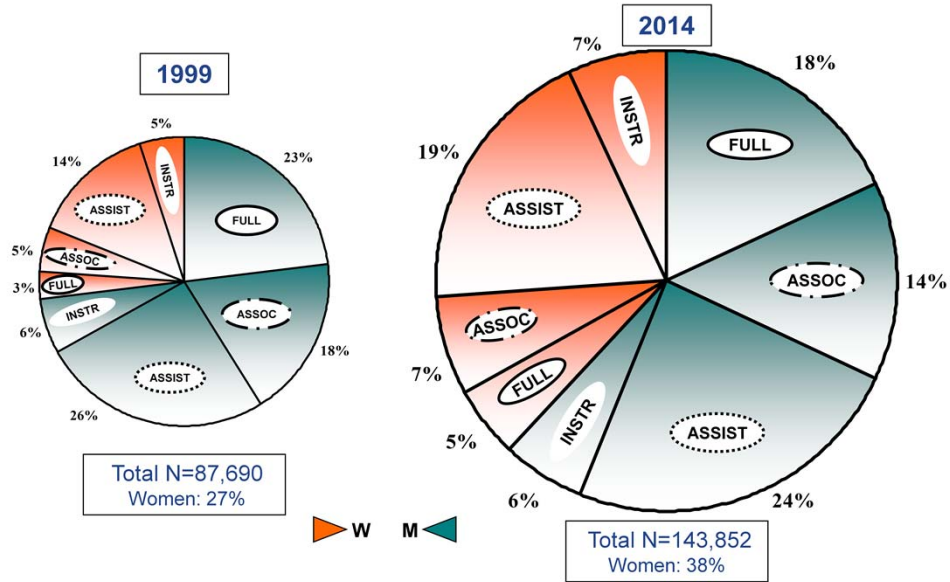


AAMC National Data Pipeline in Academic Medicine 2014





AAMC National Data, 1999 versus 2014 Medical School Faculty





***“We just need to wait for all the
women in the pipeline to advance”***

Longitudinal studies show...

**It's not a “waiting” problem
It's an advancement problem**

- Tesch B. Promotion of women physicians in academic medicine JAMA 1995
- Nonnemaker L. Women physicians in academic medicine: new insights from cohort studies. NEJM 2000



Sex differences in academic rank in US medical schools in 2014 (Jena, JAMA, 2015)

- Database of 91,073
- Full professors:
 - 11.9% of women
 - 28.6% of men
- Women less likely to be full professors (absolute adjusted ~ 4%) after accounting for age, experience, specialty, and measures of research productivity
- Sex differences across all specialties
- Did not vary by school research funding ranking





Sex differences in institutional support for junior biomedical researchers (Sege, JAMA, 2015)

Table 2. Institutional Start-up Support for Men and Women Applying for Early-Career Awards^a

	Start-up Support, Median (IQR), in 1000s of US\$			P Value ^b
	Total	Men	Women	
No. of applicants	678 (216-1100)	889 (283-1250)	350 (180-775)	<.001
Type of degree				
MD	528 (150-900)	596 (50-1123)	474 (200-800)	.95
PhD	717 (240-1100)	936 (475-1250)	348 (180-750)	<.001
MD, PhD	800 (267-1393)	961 (271-1447)	500 (0-850)	.23
Type of research				
Basic ^c	811 (350-1200)	980 (504-1290)	585 (225-882)	<.001
Clinical ^d	210 (89-350)	162 (0-435)	213 (101-350)	.25
NIH funding to institution by quartile ^e				
1 ^f	830 (263-1300)	1040 (409-1500)	368 (169-800)	<.001
2	600 (223-950)	725 (275-970)	388 (186-922)	.16
3	583 (210-750)	660 (331-1100)	541 (204-750)	.37
4	376 (150-1050)	537 (169-1160)	184 (117-600)	.16
Institutions with >10 applicants	575 (210-1080)	850 (258-1300)	483 (203-750)	.03

- Not explained by degree, years of experience, or institutional characteristics



A thousand pounds of feathers

- Unconscious bias
 - Cost of assertiveness
- Salary discrepancies
- Mentorship
- Balancing work & life
- Culture





Unconscious bias



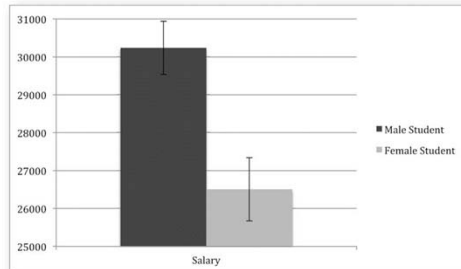
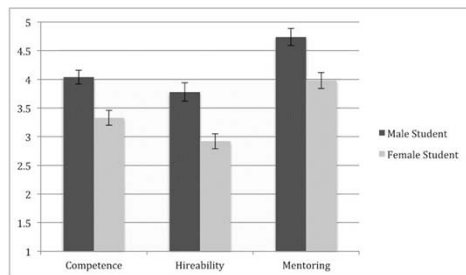
- **Gender Schemas**
 - Deeply embedded generalizations
 - Most people believe they are objective

- ***Both men and women* give lower ratings when work is thought to be a woman's**
 - grant proposals, CVs, works of art
 - Valian V. *Why so slow: The advancement of women.* Cambridge, MA:MIT Press, 1998
 - Moss-Racusin, *PNAS*, 2012



Science faculty's gender biases

- Randomized, double-blind
- 127 professors at 6 research universities
- Rate applications for lab manager
- Sent identical resumes... ½ male, ½ female

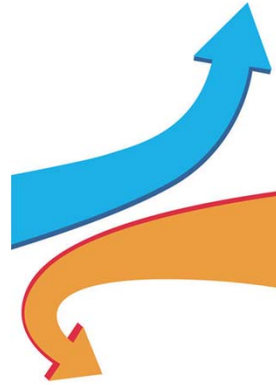


Moss-Racusin, PNAS, 2012



Bias against assertiveness in women

- The qualities required of leaders and those required of femininity are at odds
- Women are penalized for adopting a highly assertive style – incongruent with societal norms
- Narrow band of behavior is acceptable
 - Butler & Geis (1990) J Person & Social Psychol
 - Carli, LaFleur & Loeber (1995) J Person & Social Psychol
 - Heilman et al (2004) J Applied Psychol
 - Phelan et al (2008) Psych Women Quart





Gender differences in salary



- **Salary discrepancies exist after adjustment for specialty, hours worked and other variables**
 - *McMurry JE et al. J Gen Intern Med. 2000;15:372-80*
 - *Capek L et al. Plast Reconstr Surg. 1997;99:289-99*
 - *Dresler CM et al. Arch Surg. 1996;131:1128-33*
 - *Kaplan SH et al. N Engl J Med. 1996;335:1282-9*
 - *Wright AL et al. Acad Med. 2003;78:500-508*
 - *Ash AS et al. Ann Intern Med. 2004;141:205-212*
 - *Jagsi R et al. JAMA, 2012; 307:2410-2417*



Salary: early career MD researchers

- Survey to 1275 recipients of NIH K08 & K23 awards in 2010-11
- 75% response rate
- Mean salary
 - Men \$172,164
 - Women \$141,325
- adjusted for covariates: age, race, marital status, parental status, degrees, specialty, rank, years on faculty, institution type, region, work hours, research time
- **\$10,921 after adjustment**
 - Jaggi et al; Acad Med; 2013





Mentoring

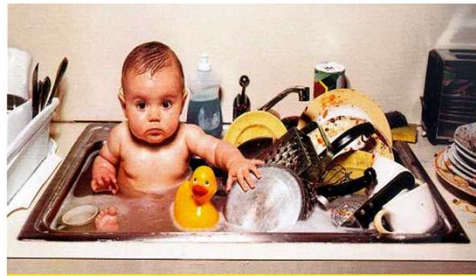
- Faculty cite mentoring as critical to success
- Women *slightly* less satisfied with mentoring
- Mentorship gaps:
 - Negotiation skills
 - Work –life balance
 - Files et al. J Women's Health; 2008
 - Blood et al. J Women's Health; 2012
 - De Castro R et al. Acad Med; 2014
- Mentor gender, gender concordance, and # of mentors not assoc with satisfaction
 - De Castro et al. Acad Med; 2014





“Work-Life balance”... Meeting goals at work and in life

- Long work hours
 - Key predictor of work-family conflict (Jacobs, 2008)
 - Odds of burnout by women increase by 15% for each additional 5 hrs/wk >40 hrs (McMurray, 2000)
- Technology blurring work-life boundaries...making jobs 24/7
- Women disproportionately in caregiving role
 - Continues in most recent study of young K08/K23 awardees (Jolly, 2014)
 - Increasing need for elder care





Dual career couples/partners

- K08 or K23 awardees between 2006-9
 - 1049 academic physicians
 - Mean age=40 yrs
 - **Spouses/partners employed *full time***
 - **86% of women**
 - **45% of men**
 - Jolly S et al. Ann Intern Med 2014





A thousand pounds of feathers

- Unconscious bias
 - Cost of assertiveness
- Salary discrepancies
- Mentorship
- Balancing work & life
- Culture





The NIH-TAC Trial

Transforming Academic Culture

Joint Principal Investigators
Stephanie Abbuhl MD & Jeane Ann Grisso MD MSc

Emily Conant MD, Stewart Friedman PhD, Mary Sammel ScD,
Rebecca Speck PhD MPH, Patricia Scott, Lucy Tuton PhD,
Alyssa Westring PhD

Grant # RO1-NS069793



NIH-TAC Trial

□ Major hypothesis

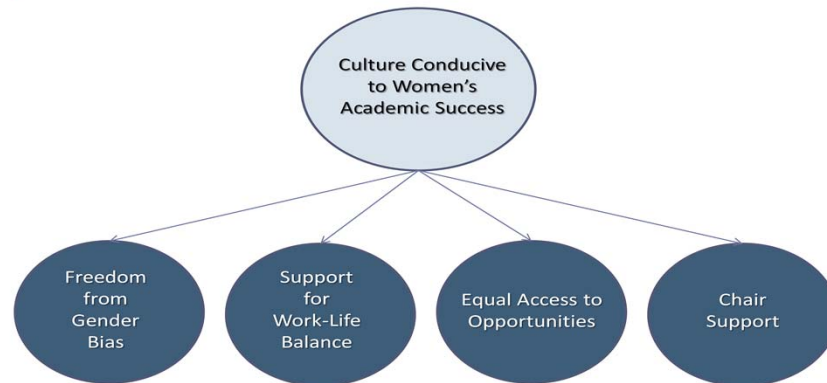
- Among women assistant professors, a multi-faceted intervention will:
 - Improve academic productivity (publications, grants)
 - Improve self-efficacy & improve culture
 - Decrease work-family conflict

□ Long term goal

- To create an environment where women can succeed fully in their careers, maximizing their contributions to academic medicine and improving workplace for all faculty



Culture Conducive to Women's Academic Success



Final Measure

- Demonstrated reliability & validity
- Four dimensions of culture



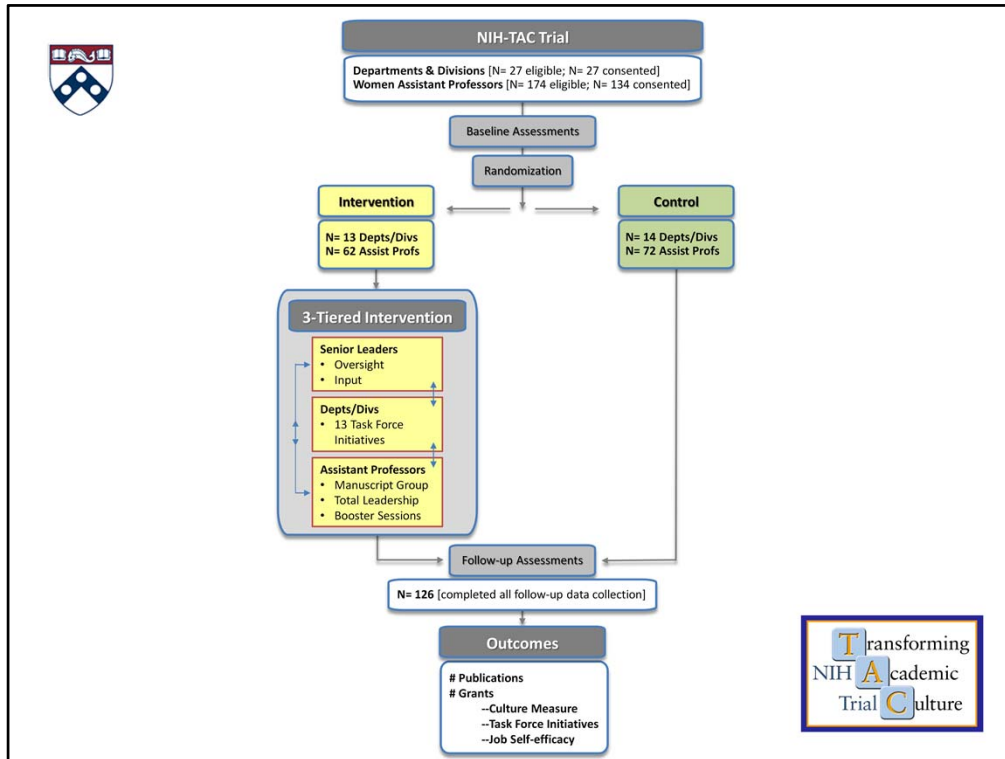


Results: Culture Conducive to Women's Academic Success



- Culture **mitigated** the impact of long work hours on work-family conflict

Westring AF et al: Culture Matters: the pivotal role of culture for women's careers in academic medicine; Acad Med. 89(4):658-63, 2014



!



NIH-TAC Results: Academic Productivity

- No differences between intervention vs control
 - **EXCEPT** in PhDs: 2.3x more first-author peer reviewed pubs
- However, both groups (combined) improved significantly:
 - Total # of peer reviewed publications increased by **46%** ($p < 0.001$)
 - Grant status* improved for **50%** of faculty ($p < 0.001$)



*Improvement in grant status defined by one or more of the following criteria:
-- increase in total number of grants
-- increase in federally funded grants
-- increase in the number of grants for which participant was principal investigator



NIH-TAC Additional Results: Intervention vs Control

- Intervention & control groups **improved** equally in:
 - work-family conflict scores (- 6.8%, $p=0.006$)
 - work self-efficacy scores (5.4%, $p=0.001$)
 - department culture scores (5%, $p=0.02$)

- **Greater decline in work hours in intervention group**
 - Intervention group: - 3.8 hours
 - Control group: -1.4 hours
 - $p\text{-value}=0.006$





Summary: NIH-TAC Trial Results

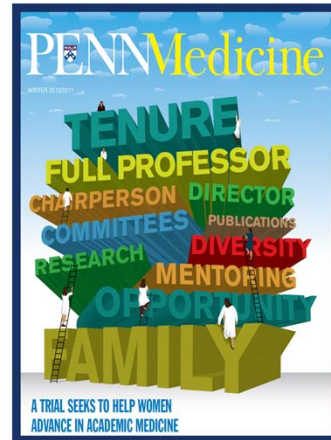
1. Culture matters
2. PhDs increased academic productivity
 - Interventions may need to be customized to specific faculty groups
3. Intervention faculty decreased work hours while sustaining academic productivity
4. Task Forces can develop and implement creative “local” initiatives that appear to benefit all faculty





Limitations

- Did the trial have an impact across the entire school?
 - Contamination and co-intervention
 - Other professional development activities (65% of controls)
- No release time for intervention faculty
- Academic productivity may not be the most meaningful outcome
- Need more f/u time → only 2 months



A Career Leadership Program for STEM Assistant Professors

Curriculum

Year 1 Eight Sessions

1. Inside Leadership
2. Total Leadership Part I
3. Total Leadership Part 2
4. Total Leadership Part 3
5. Promotion Strategies
6. Time Management
7. Effective Communication
8. Career Mapping



Year 2 (optional) Four Sessions

- Stress Management
- Leadership Styles
- Negotiation Strategies
- Refreshing Career Map

GOALS

Maximize Faculty Potential

Leadership Skills: Personal/Professional

Build Cohort Community



Evaluation

25% ↑ in confidence in leadership
 30% ↑ in confidence in negotiation
 25% ↑ in planning career goals

Demographics

- Five Schools
- Each Cohort: 18 faculty
- 3 years: 52 faculty total

Principles for Adaptation

- Obtain budget
- Identify faculty participants
- Identify course leaders
- Survey participants
- Develop curriculum
- Evaluate impact



Thank you



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