

Why are John and Steve more likely to become department chair than Jennifer or Jamal?

Molly Carnes, MD, MS

Professor, Departments of Medicine, Psychiatry, and Industrial
& Systems Engineering

University of Wisconsin-Madison

Director Women Veterans Health

William S. Middleton Memorial Veterans Hospital



Molly Carnes, MD, MS

Professor

*Director, Center for Women's Health Research
Co-Director, Women in Science & Engineering
Leadership Institute (WISELI)*



Patricia Devine, PhD

Professor

Chair, Department of Psychology



Cecilia Ford, PhD

Professor

Departments of English and Sociology



Jennifer Sheridan, PhD

Associate Scientist

*Executive/Research Director, Women in Science
& Engineering Leadership Institute (WISELI)*



Linda Baier Manwell, MS

Research Program Manager, GIM

*National Training Coordinator, Women's Health
Primary Care, Veteran's Health Administration*



Carol Isaac, PhD

Assistant Professor

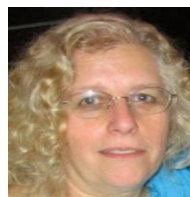
Mercer University



Angela Byars-Winston, PhD

*Associate Professor, Department of
Medicine*

*Associate Scientist, Center for Women's
Health Research*



Eve Fine, PhD

Associate Researcher

*Women in Science & Engineering
Leadership Institute (WISELI)*



Wairimu Magua, MS

PhD Program

Industrial and Systems Engineering



Patrick Forscher, MA

PhD Program

Department of Psychology



Anna Kaatz, MA, MPH, PhD

*Research Associate, Center for Women's
Health Research*



Christine Kolehmainen, MD, MS

Women's Health Physician

Wm. S. Middleton VA Hospital



Kurt Squire, PhD
 Director, GLS Center
Professor,
 Curriculum & Instruction



Brian Pelletier
Art Director, GLS Center



Dennis Paiz-Ramirez
Lead Game Designer &
PhD Student,
 Curriculum & Instruction



Belinda Gutierrez
Postdoctoral Fellow
 Counseling Psychology



Sarah Chu
Researcher &
PhD Student,
 Curriculum & Instruction



Clem Samson-Samuel
Game Designer &
PhD Student,
 Curriculum & Instruction



John Karczewski
Lead Programmer



Allison Salmon
Programmer,
Data Collection



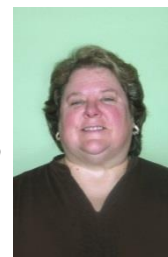
Adam Wiens
3D Artist



Jake Ruesch
Graphic Designer



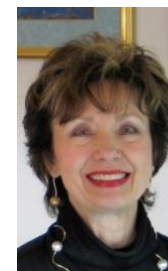
Jason Palmer
3D Artist



Vicki Leatherberry
Administrator,
Center for WH
Research



Sharon Topp
Training program
coordinator,
Center for WH
Research



Judee Bell
Assistant,
Center for WH
Research



Julia Savoy
Researcher,
WISELI



Christine Pribbenow, PhD
Evaluator,
WI Center for
Education
Research

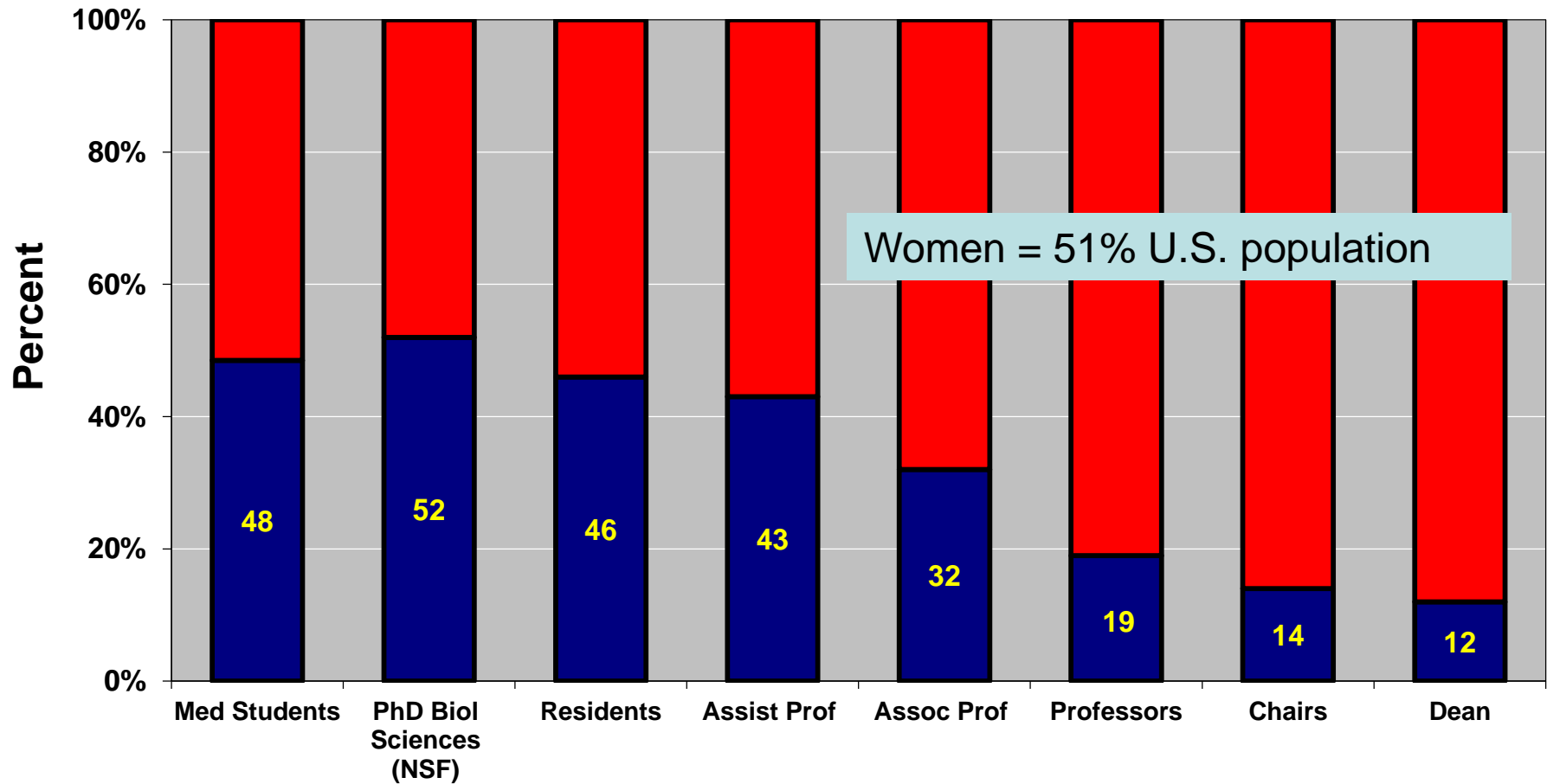
Acknowledgements

- NIH: K07 AG00744; T32 AG00265; R01 GM088477; DP4 GM096822
- NSF: ADVANCE Institutional Transformation Award 0213666; Partnership for Adaptation, Implementation, and Dissemination SBE-0619979
- DHHS Office of Women's Health, National Center of Excellent Award
- Shapiro Summer Scholars Program, UW SMPH
- Department of Medicine
- UW School of Medicine and Public Health, College of Engineering, School of Pharmacy, School of Veterinary Medicine, College of Letters and Sciences, and College of Agricultural and Life Sciences
- Meriter Hospital; William S. Middleton VA Hospital

Today's lecture will consider the following:

1. How cultural stereotypes can constrain opportunities for advancement in academic medicine and science
2. Some of our research on stereotype-based bias with text analysis, code leadership by medical residents, and a video game
3. Effective strategies for “breaking the bias habit”

% Men (red) and Women (blue)



<https://members.aamc.org/eweb/upload/Women%20in%20U%20S%20%20Academic%20Medicine%20Statistics%20and%20Benchmarking%20Report%202011-20123.pdf>

Black/African American

- U.S. population = 12%
- Medical Students = 6.1%
- Faculty = 2.8%
- Full professors as % of all U.S. medical faculty = 1.4%
- Department chairs = 2.8% (W=0.2%; M=2.6%)

https://members.aamc.org/eweb/upload/Diversity%20in%20Medical%20Education_Facts%20and%20Figures%202012.pdf

Do we care?

- The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools and Societies (*Scott E. Page*)
- The Wisdom of Crowds (*James Surowiecki*)
- Link between women leaders and improvements in women's health (*Carnes et al. JWH, 2008*)
- Women leaders more likely to be transformational (*Eagly et. al., Psychol Bull 2003*)
- Black physicians show least implicit race bias (*Sabin et al. J Health Care Poor & Underserved 20:896, 2009*) and more likely to practice in underserved areas (*Smedley et al. National Academies Press, 2001*)

Two kinds of inter-group bias

1. Explicit, consciously endorsed, personal beliefs
 - Decreasing
2. Implicit processes based on mere existence of cultural stereotypes
 - Still highly prevalent –
<https://implicit.harvard.edu/implicit/demo/takeatest.html>
 - Strong predictor of behavior in some settings, even if at odds with personal beliefs
 - A major factor in preventing diversity in academic medicine and perpetuating healthcare disparities

Devine, J Pers soc Psychol, 1989. Carnes et al. JDHE, 2012. Chapman et al. JGIM, 2013

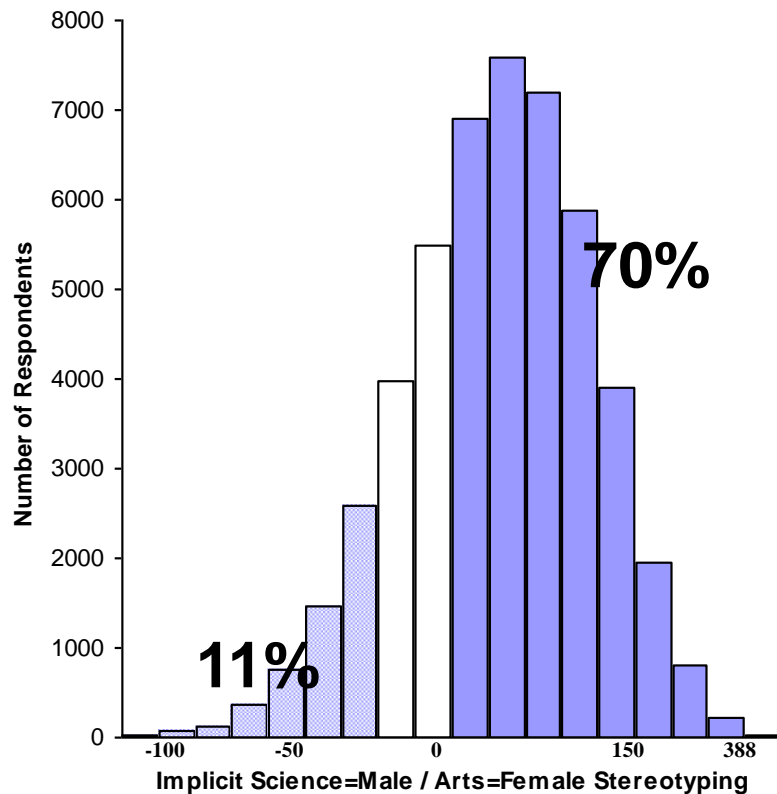
Cultural stereotypes about men and women

- Men are *agentic*: Decisive, competitive, ambitious, independent, willing to take risks
- Women are *communal*: nurturing, gentle, supportive, sympathetic, dependent

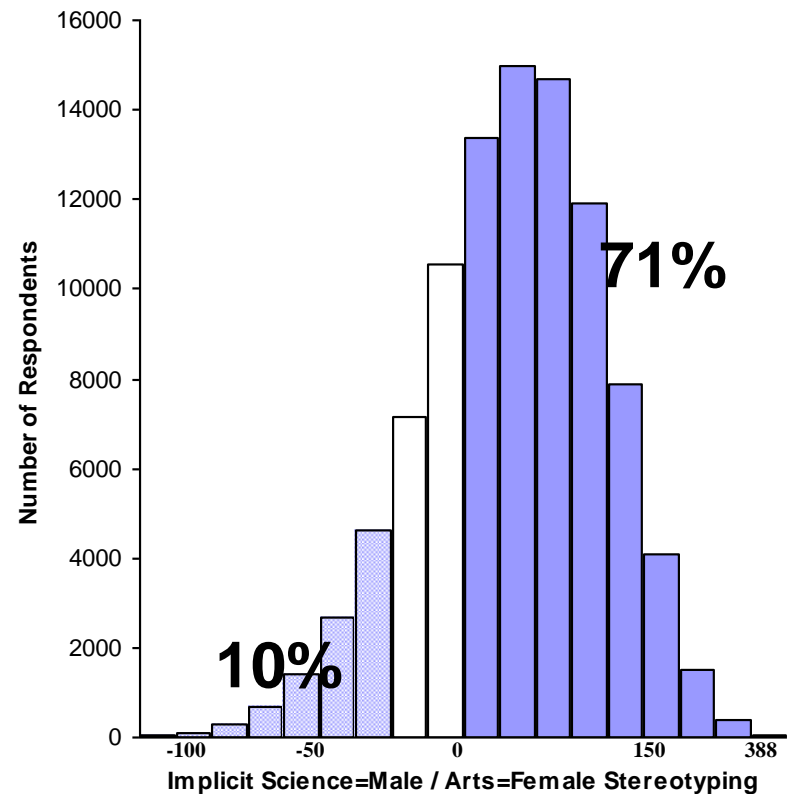
Works of multiple authors over 30 years: e.g. Eagly, Heilman, Bem, Broverman

Implicit Gender-Science Stereotypes

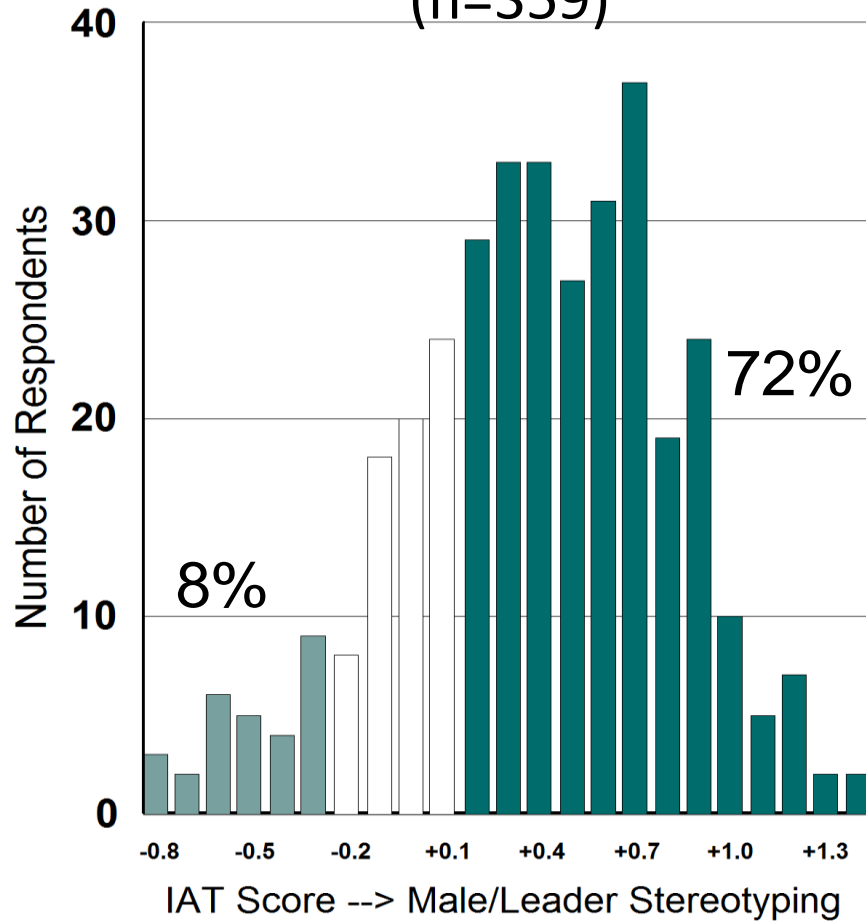
Male Respondents



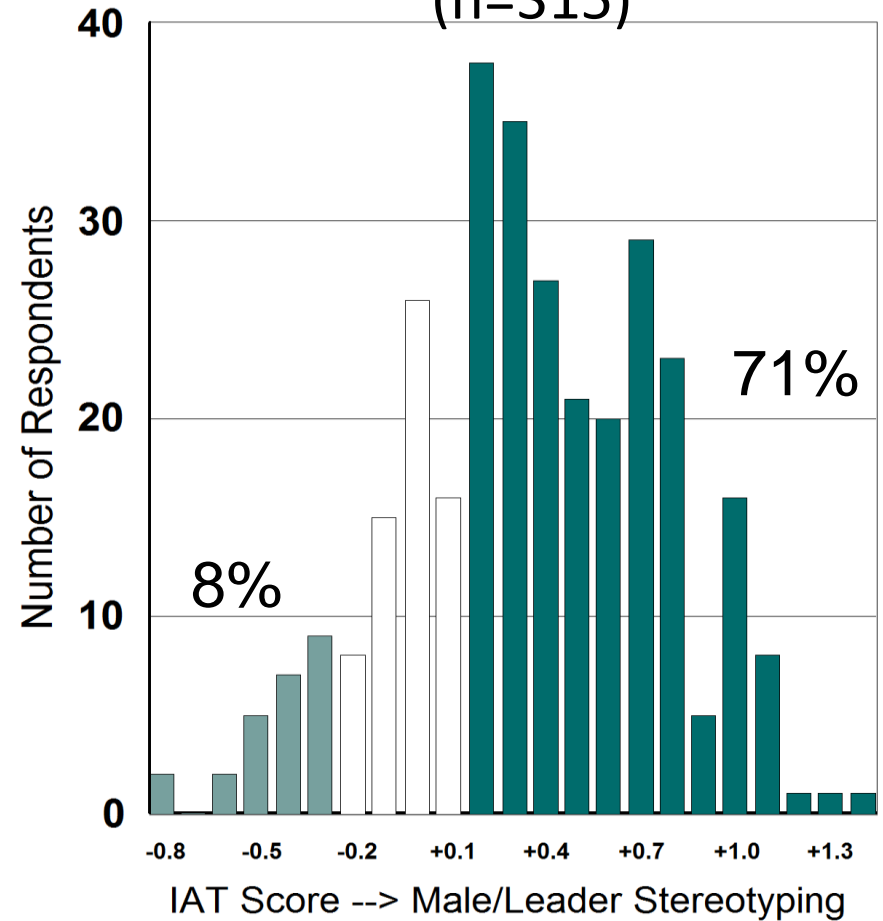
Female Respondents



Male Respondents
(n=359)



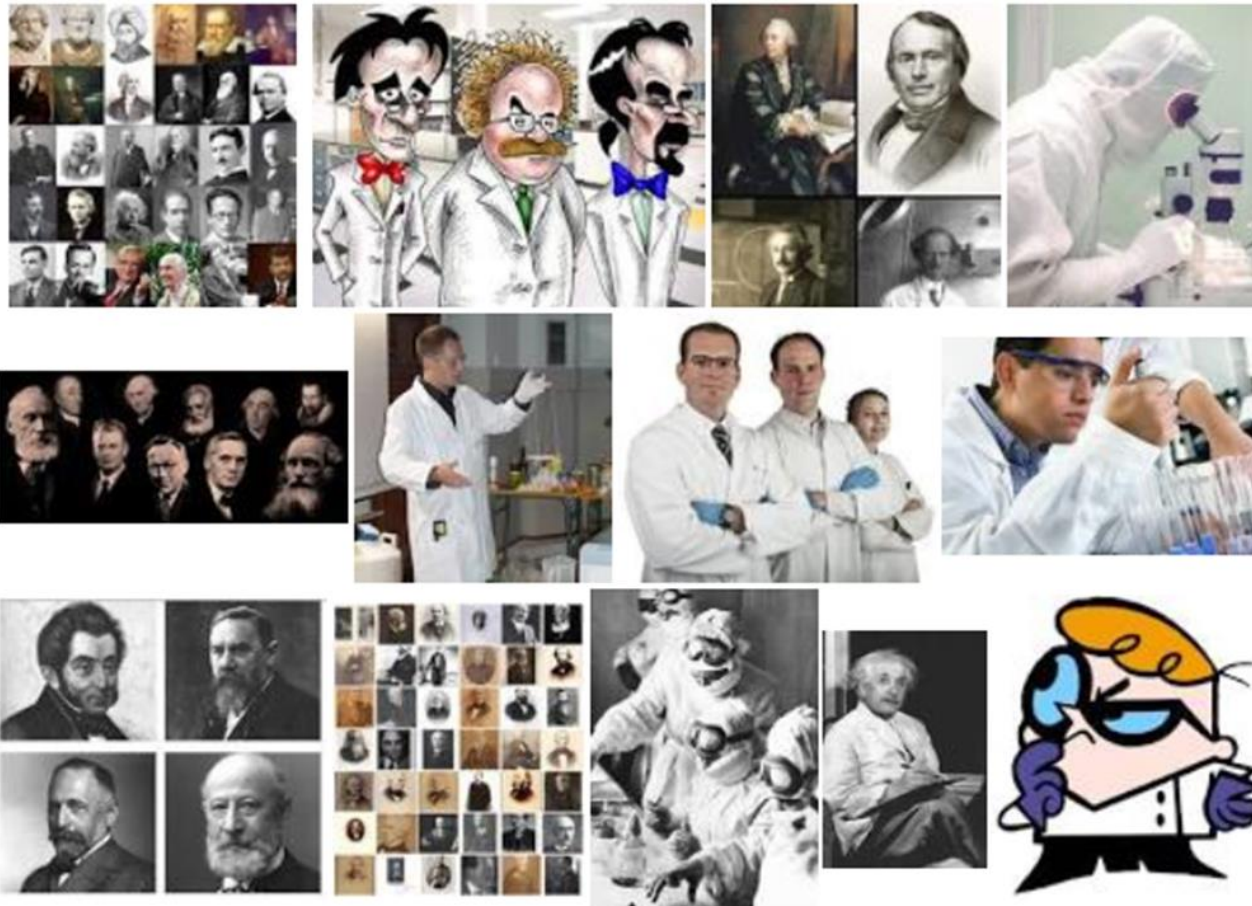
Female Respondents
(n=315)



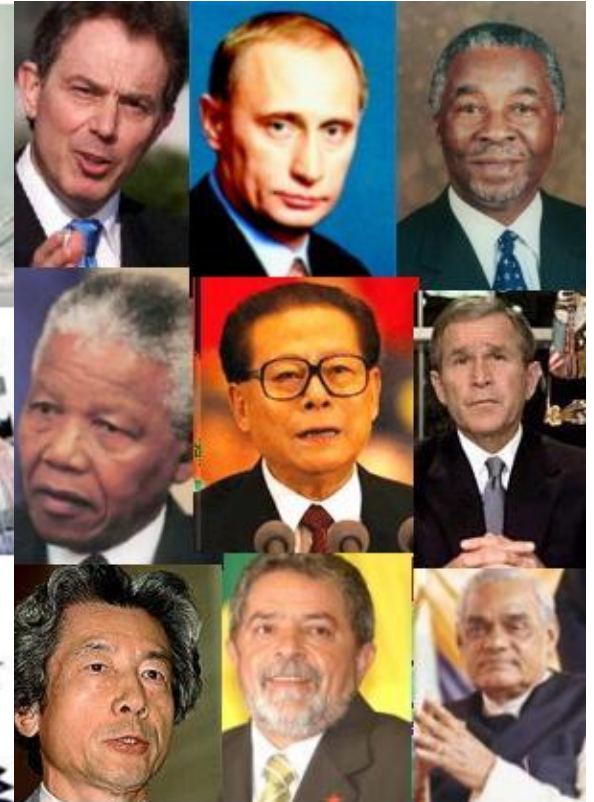
Gender and Leadership IAT Scores

Science and leader more strongly associated with male than female

“Pictures of scientists”



“Pictures of leaders”



Jennifer vs. John

Impact of gender stereotypes

- On evaluation of Jennifer for male-typed role:
 - Lack of fit (*e.g. Koenig et al. Psychol Bull 137:616, 2011*)
 - Assumption of lower competence (*multiple studies by Biernat and colleagues; e.g. Biernat et al., Social Cognition 26:288, 2008*)
 - Social reprisal for violating gender norms (*e.g. Okimoto & Heilman J Soc Iss 68:704, 2012*)
- On Jennifer:
 - Fear of “backlash” (*Rudman & Fairchild J Pers Soc Psych 87:157, 2004; Moss-Racusin & Rudman Psych Wom Quart 34:186, 2010*)
 - Stereotype threat = underperformance due to the threat of confirming the stereotype (*Burgess et al., 87:506, Acad Med, 2012*)

The diagram features a central white box with a black border, containing text about medical specialties. This box is flanked by two large white arrows with black outlines. The left arrow points upwards and is labeled 'Status'. The right arrow points downwards and is labeled 'Proportion of women'. The central box is divided into three horizontal sections. The top and bottom sections are light blue ovals with black borders, containing the names of 'Agentic' and 'Communal' specialties respectively. The middle section is a white rectangle with a black border, containing two bulleted lists: 'Lower status within specialties' and 'Higher status within specialties'. The entire diagram is set against a dark red background.

Status

**“Agentic” specialties:
Neurosurgery, Orthopedics,
Urology**

Lower status within specialties:

- education,
- service,
- anything specific to care of women,
- lower rank,
- non-tenured

Higher status within specialties:

- procedures (e.g. interv. cards, gyn oncology),
- higher rank,
- tenured

**“Communal” specialties:
Pediatrics, Family
Medicine, primary care IM
specialties**

Proportion of women

Male and female students socialized toward different specialties?

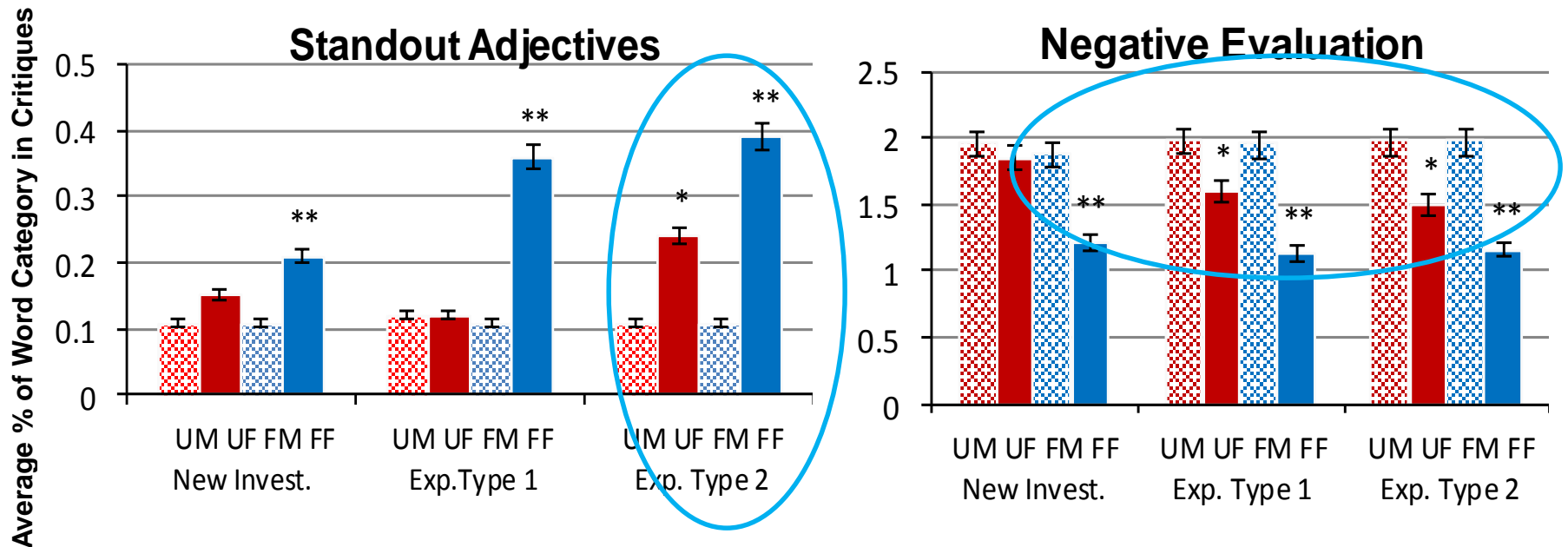
- Text analysis of 297 MSPEs
- Only female students with female authors had family medicine correlated with standout adjectives
- Male students
 - Male authors: Family medicine absent
 - Female authors: Family medicine negatively correlated with ability & insight
 - “[he] really surprised us! [he] is an exceptional student [in family medicine].”
 - “although [he] received highest honors on [his] family medicine rotation, surely [his] finest performance was on surgery ... was outstanding - spoke with families, got consent forms signed, was extremely aggressive....”

Gender stereotypes and evaluation

- Funding discrepancies occur with type 2 (renewal) R01s (Ley & Hamilton. *Science* 2008; Pohlhaus et al., *Acad Med* 2011; <http://report.nih.gov/NIHDatabook/Charts/Default.aspx?showm=Y&chartId=178&catId=15>)
- “Goldberg” designs indicate that work performed by women is rated of lower quality than work performed by men regardless of the rater’s gender (reviewed in Isaac et al. *Acad Med* 2009)
- Science faculty rated a male applicant as more competent, hireable, deserving of mentorship, and worth a higher salary than an identically credentialed female student whom they found more likeable. (Moss-Racusin et al. *PNAS* 2012)

Quantitative text analysis of R01 critiques

- 443 grant reviews from R01s awarded after unfunded in 2008 (N=65)
- Women's: more standout adjectives (e.g., excellent, outstanding) ($p \leq 0.01$)
- Men's: more negative descriptors (e.g., unfocused, illogical) ($p \leq 0.01$)



Women held to higher confirmatory standards for fundable research?
Men held to higher confirmatory standard for unfundable research?

Jennifer vs. John

Impact of gender stereotypes

- On evaluation of Jennifer for male-typed role:
 - Lack of fit (*e.g. Koenig et al. Psychol Bull 137:616, 2011*)
 - Assumption of lower competence (*multiple studies by Biernat and colleagues; e.g. Biernat et al., Social Cognition 26:288, 2008*)
 - Social reprisal for violating gender norms (*e.g. Okimoto & Heilman J Soc Iss 68:704, 2012*)
- On Jennifer:
 - Fear of “backlash” (*Rudman & Fairchild J Pers Soc Psych 87:157, 2004; Moss-Racusin & Rudman Psych Wom Quart 34:186, 2010*)
 - Stereotype threat = underperformance due to the threat of confirming the stereotype (*Burgess et al., 87:506, Acad Med, 2012*)





“She’s a bitch!”

Exploring code leadership

- Interview 25 medical residents from 9 programs
- Male and female residents felt both genders equally effective
- Code leadership = highly agentic
 - Assertive, authoritative presence, loud deep voice, tall
- Counternormative behavior stressful for female residents
 - “I just felt kind of bad yelling at people”
 - “I always turn red”
 - “I just try my best to look authoritative...but it’s stressful”
- Female residents found effective strategies to integrate conflicting identities

Strategies to integrate dual identities

- Permission to suspend gender norms
 - “That is not a very accepted way to speak to people outside of a code but I think in that room it’s fine.”
 - “Normally I’m very much ‘would you mind please putting in a line?’ [In a code] it’s a different situation totally. I just drop the formalities and pleasantries.”
 - “I’m super apologetic afterward”
- Affirm legitimate power
 - wearing your long coat, having a badge that says ‘resident’, announcing ‘I have the code pager’
- Adopt a “code persona” and a “code stance”
 - “I tend to stand at the foot of the bed or have my hands on the foot of the bed and then just sort of lean over the patient a little bit...[it] makes me feel like I’m more in control of the situation.”

Powerful postures make one think and act like a powerful person



Carney et al. Psychol Sci 21:1363, 2010; Huang et al. Psychol Sci 22:95, 2011;
Adam & Galinsky J Exp Soc Psychol 48:918, 2012

Implications for resident training

- Clear affirmation that research finds no difference in effectiveness of male and female code leaders (*Wayne et al. Simul Healthc 7:134, 2012; Kolehmainen et al. Acad Med, 2013*)
- Acknowledge existence of socialized gender norms and greater departure from those norms and code leader behaviors for women than men
- Present some strategies that have helped others (along with evidence-base)

David vs. Jamal

70-80% of IAT takers more strongly associate White faces with pleasant words and Black faces with unpleasant words

Implicit bias predicts:

- Awkward body language in conversations between a White student and a Black student (*Dovidio, et al., 2002*) or Black experimenter (*McConnell and Leibold, 2001*)
- Interpretation of friendliness in facial expressions (*Hugenberg & Bodenhausen, 2003*)
- More negative evaluations of a Black vs. a White individual's ambiguous actions (*Devine, 1989; Rudman & Lee, 2002*)
- Inadequate prescription of opioid analgesics in identical clinical vignettes of Black vs. White patients in pain (*Sabin, 2012*)
- Failure to follow treatment guidelines in prescribing thrombolytic therapy in identical vignettes of Black vs. White patient with acute myocardial infarction (*Green et al., 2007*)

Using a video game to address issues of race bias



- Web-based game inspired by point-and-click adventure games
- Players take the perspective of Jamal Davis, African American graduate student
- 5 chapters, each with goals
 - e.g. Chapter 1: write personal statement, find out about funding, select an advisor
- Goal:
 - Provide authentic experience where player has agency to discover implicit bias and its consequences in a safe space as a means to transformative learning

Challenges

- Ensuring that the contents are authentic, engaging, and not offensive
- Making sure that the game does not actually reinforce negative societal stereotypes
- Encountering bias events without putting all the responsibility for action on Jamal

Examples of biases in *Fair Play* that could negatively impact an academic career

- Color-Blind Racial Attitudes (*e.g., Plaut et al. 2009; Morrison et al. 2010; Ryan et al., 2007*)
 - Dr. McNamara, a faculty member, tells Jamal that he treats all students the same whether they are white, black, or polka-dot
- Tokenism (*e.g., Wright, 2001*)
 - Jamal is asked to speak on behalf of all Black people
- Status Leveling (*e.g., Smith, 1985*)
 - Lucas, a graduate student, assumes Jamal is a caterer rather than an incoming graduate student
- Racial Microaggression (*McCabe, 2009; Sue et al., 2007; Sue, 2010*)
 - Wall portraits of past departmental faculty are all White men

The Almanac

- Just in time or on-demand learning
- Track examples of implicit bias
- Provide definitions of terms
- Citations to relevant literature

MENU

GOALS

INVENTORY

ALMANAC

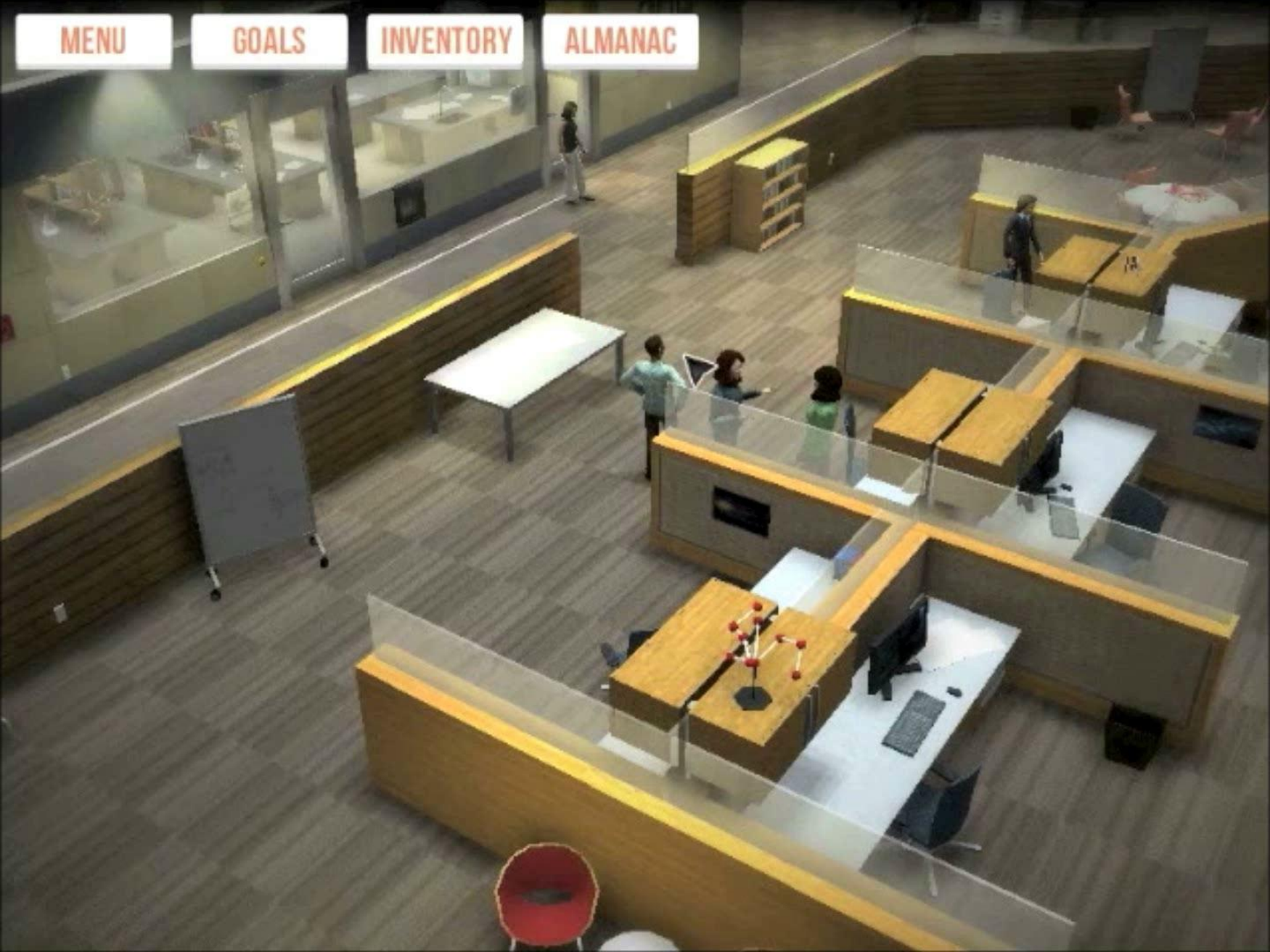


MENU

GOALS

INVENTORY

ALMANAC



Possible Uses for *Fair Play*

- Initiate discussion of sensitive topic of bias
- Professional development
- Promote perspective-taking as a way to induce empathy and reduce implicit bias (*Gutierrez, B. et al., Games for Health, in press*)

Breaking the bias habit takes *more than good intentions*

- Awareness
- Motivation
- Self-efficacy
- Positive outcome expectations
- Deliberate practice

e.g. Bandura, 1977, 1991; Devine, et al., 2000, 2005; Plant & Devine, 2008; Ericsson, et al., 1993; Prochaska & DiClemente, 1983, 1994

Breaking the bias habit in academic science, medicine & engineering

- Cluster Randomized Controlled Study
- 92 departments (2290 faculty) – 46 pairs
 - General discipline, School/College, size
 - Randomly allocated to experimental or wait list control
- Intervention = 2.5 hour workshop
 - Attendance/dept = 31%, SD =21
 - Overall 301 attended/1137 invited = 26%
- Measures (50.4% response rate)
 - Implicit Association Test (gender and leadership)
 - Motivation to engage in gender bias reduction
 - Gender equity self-efficacy
 - Gender equity outcome expectations
 - Self-reported gender equity action

Personal Bias Reduction Strategies

- Stereotype Replacement
- Counter-Stereotypic Imaging
- Individuating
- Perspective-Taking
- Increase Opportunities for Contact

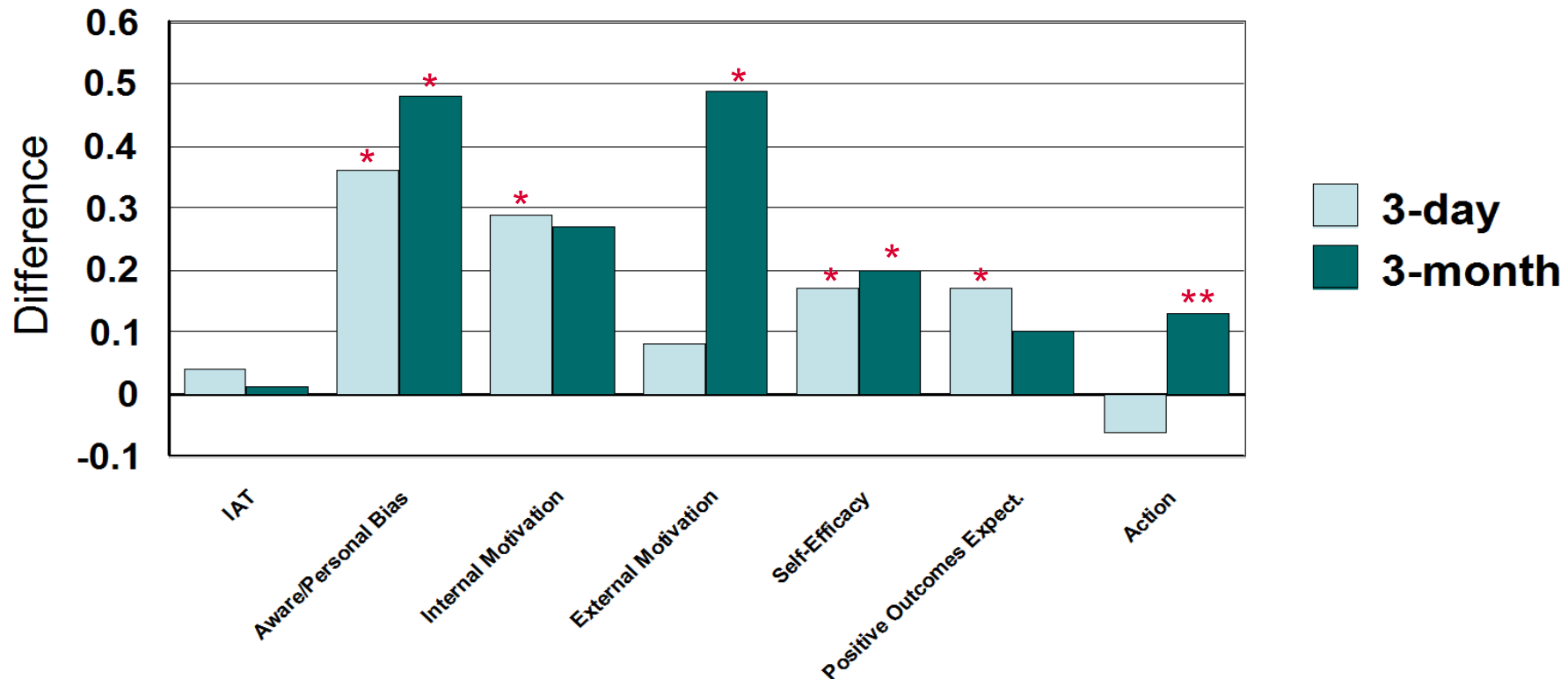
(e.g., Galinsky & Moskowitz *J Pers Soc Psychol* 2000; Monteith et al., *Pers Soc Psychol Rev* 1998; Blair et al., *J Pers Soc Psychol* 2001)

- Plus 2 that DON'T work:
 - Stereotype Suppression
 - Too Strong a Belief in One's Personal Objectivity

(e.g. Macrae et al. *J Pers Soc Psychol* 1994; Uhlmann & Cohen. *Organ Behav Hum Decis Process* 2007)

Differences Between Experimental & Control Departments Compared With Differences at Baseline

3-day and 3-month



N = 92 departments; 1154 faculty (50.4% response rate)

* Statistically significant difference of $p < 0.05$ between experimental and control departments compared with differences at baseline

** Significant only for departments in which $\geq 25\%$ of faculty attended the intervention workshop, $p < 0.05$

Does changing behavior of faculty affect departmental culture?

Study of Faculty Worklife:

- Faculty surveyed baseline and after completion of interventions; 41%, 43% response (N=671 responded both times)
- Experimental vs. control improvements in:
 - Research valued ($P=0.024$)
 - “Fit” in department ($P=0.019$)
 - Comfort raising personal/family issues that conflict with department activities ($P=0.025$)

Summary & Conclusions

1. Cultural stereotypes about race and gender lead to subtle unintentional advantages in academic career advancement for John and Steve not afforded to Jennifer or Jamal
2. Stereotype-based bias is a habit that can be broken, but it requires more than good intentions
3. Breaking the bias habit appears to improve department climate for everyone

