

Women in Science & Engineering Leadership Institute University of Wisconsin-Madison



### Understanding and Minimizing Unconscious Bias to Improve Department Climate

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#### About WISELI:

- Research institute at UW-Madison
- Mission: Advancing and promoting women in academic Science, Technology, Engineering, Mathematics and Medicine (STEMM) – focus on faculty.
- Broader goals: fostering a diverse faculty

#### About Center for Women's Health Research:

- Improve health of women and racial/ethnic minorities by training a diverse cadre of future academic leaders in women's and minority health
- Conduct research on sex/gender and race/ethnicity differences
- Advance women and racial/ethnic minorities in academic leadership

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Why do you think it is important to have a diverse faculty and student body in science and engineering; to have better representation of women and minorities in science?

## Why diversity?

- Diverse working groups are more productive, creative, and innovative than homogeneous groups (Herring 2009; Page 2007; van Knippenberg & Michaela 2007; Chang et al., 2003).
- Diverse groups engage in a higher level of critical analysis than do homogeneous groups (Sommers 2006; Antonio 2004; Nemeth 1986, 1995).
- Diverse scholars and professionals can invigorate and expand disciplines and fields (Schiebinger et al. 2013; Catalyst, 2013).
- Mentors and role models for all (Nat. Acad. Sci. 2007).
- Fairness and equity (Nat. Acad. Sci. 2007).





## The problem



SOURCE: National Science Foundation/National Center for Science and Engineering Statistics (NSF/NCSES), Survey of Earned Doctorates.

## The Problem



### The easy answers have proven inadequate

"Pipeline" problem	Cohort studies show proportion of female PhD does not increase proportion of females in faculty ranks at expected rates (AAMC, 2014; NSF 2010, 2014).
Women deficit argument	Female vs male scientists, mathematicians: equivalent or more competent despite lower self-rated competence (Hyde et al., 2008; Rolfe et al. Med Educ, 1995; Lind et al. J Surg Res, 2002; Nasca et al. Med Teach, 2002).
	Women comparable or more effective leaders (Eagly et al. Psychol Bull 2003; Rosser, Equity & Excel in Educ, 2003; Handelsman & Birgeneau, 2007).
Women are less interested or less committed	Male and female faculty express comparable commitment and interest in career advancement (Broaddus & Feigel, Chest, 1994; Wright et al. Acad Med, 2003; Shollen et al., Acad Med, 2009; Jagsi et al., 2009, 2011).

## Why haven't we solved this already?

- Title IX (the Education Amendment) in 1972.
- > Multiple calls for gender equity for > 40 years.
- National Academy of Sciences concluded that major barriers were:
  - □ <u>Not</u> too few women enter most fields (pipeline argument).









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## Solutions? Commitment vs. Results

- Despite broad commitment to the goal of diversity, why are results are less than satisfactory?
  - Influence of unconscious bias and assumptions
  - Department and campus climate





## Influence of Unconscious Bias and Assumptions

## Group exercise

What traits or behaviors do you think most people associate with being male or "masculine"?

What traits or behaviors do you think most people associate with being female or "feminine"?





## Group exercise

# What traits do you associate with being a scientist?





## Bias in evaluation of science competence



## Bias in evaluation of science competence



## Impact of stereotype-based gender bias

- Stereotypes lead reviewers to make assumptions that women lack competence, so they may:
  - Doubt women's ability (Trix and Psenka, 2003; Heilman, 2007).
  - Require more proof (i.e., more accomplishments) to confirm competence (Biernat, 1997, 2012; Heilman 2004, 2007; Kaatz, 2015).
  - Attribute women's accomplishments to others or devaluation of women's accomplishments (Heilman, 2007).
  - Require a higher quality of work (Biernat, 1997, 2012; Heilman, 2007; Kaatz, 2015).

## Impact of stereotype-based gender bias

#### Hiring

- Women faculty provided fewer institutional resources and lower pay (Tesch et al. JAMA, 1995; Carr et al. Ann Int Med, 1998; Ash et al. Ann Int Med, 2004).
- Letters of recommendation for women science and med school faculty are shorter, have more references to personal life, and contain fewer "outstanding" descriptors (Trix & Psenka, Discourse & Soc, 2003; Schmader et al., 2007).
- Women faculty more likely assigned "institutional housekeeping" (Bird et al., NSWA Journal, 2004; Shollen et al., Acad Med, 2009).

Women faculty offered fewer opportunities for advancement (Wright et al, 2003).

- Funding
  - Women physicians and scientists who submit R01 proposals to NIH are significantly less likely than men to be funded. And text analysis of grant critiques suggests that women may be held to higher standards than men to earn fundable application scores (Ley & Hamilton Science, 2008; Pohlhaus et al., 2011; NIH ,2015; Kaatz et al., 2015).
- Publishing
  - When the gender of the author is known, women are less likely to have their publications accepted (Budden et al, Trends Ecol Evol, 2008).
- Controlled experiments
  - "Goldberg" designs indicate that work performed by women rated of lower quality than the work performed by men regardless of gender of rater (Steinpreis, et al., 1999 ; Isaac et al, Acad Med 2009; Moss-Racusin et al., 2012).

## **Bias starts early**

- Moss-Racusin, C. et al. (2012). "Science faculty's subtle gender biases favor male students." PNAS 109: 16474-16479.
  - 127 Faculty from Biology, Chemistry and Physics departments participated.
  - Evaluated an application randomly assigned a male or female name for:
    - Competence, hireability, likeability, starting salary, and willingness to provide mentoring.



Results: Male

"Many scientists think that, since they came through the system and are successful, the system works."

Jo Handelsman

Male applicant rated significantly more competent and hirable than female applicant and was granted a higher starting salary and offered more mentoring.



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## What is "gender equity"?

Gender equity in an academic institution means that men and women enjoy equal opportunities for education, employment, success, advancement, and satisfaction.



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# Influence of Department Climate

# What is climate?

Behaviors within a workplace or learning environment, ranging from subtle to cumulative to dramatic, that can influence whether an individual feels personally safe, listened to, valued, and treated fairly and with respect.

UW-Madison Campus Climate Network Group, 2002

The atmosphere or ambience of an organization as perceived by its members. An organization's climate is reflected in its structures, policies, and practices; the demographics of its membership; the attitudes and values of its members and leaders; and the quality of personal interactions. UW-Madison Committee on Women in the University, 2002

## Why focus on climate?

- Individuals experience climate in their immediate workplace – the department, research center, or laboratory
- Perceptions about climate and belonging are key determinants for satisfaction and retention
- Numerous surveys show that women and members of underrepresented groups experience a more negative climate than do men and members of majority groups.
- Improving climate is critical for the retention and advancement of women and members of underrepresented groups.

Rosser, 2004; Ryan et al., 2012; Trower, 2005, 2014. For more see: http://wiseli.engr.wisc.edu/climate/BrochureRefs2015.pdf - #3

## In my department the overall climate is ...



#### Results from the UW-Madison Faculty Worklife Survey, 2012

## The climate for women in my dept. is ...



Results from the UW-Madison Faculty Worklife Survey, 2012

## The climate for faculty of color in my dept. is ...



# How much harder to you have to work to be perceived as a legitimate scholar?



#### Results from the UW-Madison Faculty Worklife Survey, 2012

# Climate workshops for dept. chairs

- Since 2004, over 45 UW-Madison departments have participated (some more than once)
- Over 3000 individuals have completed the department survey of workplace climate
  - Faculty
  - Staff (academic staff and university staff)
  - Graduate Students
  - Postdocs





## Climate workshops for dept. chairs

No major differences between "overall" climate experienced by various groups:

Group	Mean Rating	n=
University Staff	3.61	401
Academic Staff	3.75	685
Faculty	3.73	917
Post docs	3.98	97
Graduate Students	3.80	1140
Other	3.15	26
All	3.74	3240

1=Very negative; 2=Negative; 3=Mediocre; 4=Positive; 5=Very positive





## Climate workshops for dept. chairs

- Common Themes emerging from survey data:
  - Lack of respect, consideration, politeness
  - Under-appreciated
  - Lack of trust in decision-makers; insufficient influence or role in departmental decision making
  - Sense of isolation (despite physical presence of others)
  - Differences among people are not valued
  - Subtle or overt forms of harassment or discrimination





## Unconscious bias & climate

- 1. How might unconscious biases influence department/campus climate?
- 2. What can we do to minimize bias and improve climate?





## Selected manifestations of bias

- Competency Bias
- Stereotype Threat
- >Ambient Belonging
- Microaggressions





- 6,548 university faculty members received an emailed request from a prospective graduate student to meet briefly to discuss shared research interests and research opportunities
- Name of the student signaled gender and race/ethnicity (male or female and Causasian, African American, Hispanic, Indian, or Chinese)

#### Two conditions:

- To meet today
- To meet the next week

Milkman, Akinola, and Chugh. (2012). Temporal Distance and Discrimination: An Audit Study in Academia. *Psychological Science* 23(7): 710-717.

#### Measured the following:

- Whether faculty members responded to the email
- Whether the request to meet was accepted
- Compared responses to requests by gender and race/ethnicity
- Compared responses to requests to meet on the same day or one week later

Milkman, Akinola, and Chugh. (2012). Temporal Distance and Discrimination: An Audit Study in Academia. *Psychological Science* 23(7): 710-717.

### Hypothesis

For requests to meet on the same day:

No influence of bias/assumptions – response would be based on availability

#### For request to meet one week later:

Negative stereotypes/assumptions about women and minorities would influence faculty members' assessments about the desireability of a meeting.

Women and minorities would receive few positive responses than Causasian men.

Milkman, Akinola, and Chugh. (2012). Temporal Distance and Discrimination: An Audit Study in Academia. *Psychological Science* 23(7): 710-717.

- No significant difference in responses or acceptances for request to meet on same day.
- Caucasian males received significantly more responses and acceptances for requests to meet a week later



Milkman, Akinola, and Chugh. (2012), p. 712

## Stereotype Threat

*Fear* of being judged on the basis of a group stereotype; or of confirming a negative group stereotype.

Triggered when comments or environmental cues make group membership salient.

Claude Steele and colleagues, many articles.

## Multiple studies on stereotype threat

- Equally and highly qualified men and women taking a difficult math test – under two conditions: informed that the test typically showed gender difference or that it did not produce gender differences. Spencer, S.J., Steele, C. M., & Quinn, Diane M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, 35(1), 4-28.
- Asian women taking a difficult mathematics test –primed to think about their ethnic identity vs. primed to think about their gender identify.

Shih, M., & Pittinsky, T. L. (1999). Stereotype susceptibility: Identity salience and shifts in quantitative performance. *Psychological Science*, *10*(1), 80–83.

White men students at Stanford U. with high scores on the math SAT took a challenging math test under two conditions – primed with information Asian students perform better than White students on tests of math ability vs. no priming.

Aronson, J., & Lustina, M. J. (1999). When white men can't do math: Necessary and sufficient factors in stereotype threat. *Journal of Experimental Social Psychology*, *35*(1), 29–46.

Ambient belonging when choosing a major

Undergraduate students, non-declared major

> Entered room in two conditions:

- Stereotypical computer science objects
- Non-stereotypical objects

Filled out a career assessment questionnaire – included measuring level of interest in taking a course or majoring in computer science

Cheryan, S., V.C. Plaut, P. Davies, & C.M. Steele. (2009). Ambient Belonging: How Stereotypical Cues Impact Gender Participation in Computer Science. *Journal of Personality and Social Psychology* 97, 1045-1060.





#### **Environment influences women's interest in CS**



Images used with permission of Dr. Sapna Cheryan

#### **Environment influences women's interest in CS**



Chervan. Plaut. Davies & Steele. Journal of Personality & Social Psychology. 2009

Images used with permission of Dr. Sapna Cheryan

# Microaggressions



"... brief and commonplace daily verbal, behavioral, or environmental indignities, whether intentional or unintentional,

that communicate hostile, derogatory, or negative ... slights and insults toward the target person or group."



Derald Wing Sue,

Microaggressions in Everyday Life (2010)





# Microaggressions

#### Microassaults

Conscious or deliberate; meant to attack, hurt or insult; usually expressed when:

- Anonymity is assured
- In presence of like-minded people assumed to share similar attitudes/beliefs
- Loss of control (anger, frustration, intoxication)

#### Microinsults

Interpersonal or environmental communications that convey stereotypes, rudeness, insensitivity. Can demean a person's race, gender, sexual orientation, heritage, or identity

#### Microinvalidations

Communications or environmental clues that exclude, negate, nullify the psychological thoughts, feelings, experiences of individuals or groups

## Microaggressions

Comment	Message Received
"Where are you from?"; "Where were you born?"; "You speak good English"	You are not American
"There is only one race, the human race" "When I look at you, I don't see color"	Denying a person of color's racial/ethnic experiences
"You are a credit to your race" "You are so articulate"	It is unusual for someone of your race to be intelligent
"I treat everyone equally"	I am incapable of being biased
"Wow – how did you become so good at math" (or physics, or science) – said to a woman	Women aren't usually good in these fields.
Referring to an assertive woman as a "bitch"	Women should be passive and subservient
Use of the pronoun "he" to refer to all people	Male experience is universal

#### Derald Wing Sue, 2010

## Microaggressions - examples

"I notice a difference in the way my female TA is treated by her students vs. my male TA. She has to work harder to prove herself."

"Women's accomplishments are overlooked. It is routine for my department to tell women that they are not ready for promotion."

"Sometimes women seminar speakers will get asked intentionally difficult questions by an emeritus professor. We've learned to let speakers know about it."

Study of Faculty Worklife, UW-Madison, 2012

"In the last 12 months, have you personally experienced or witnessed unconscious or implicit bias at UW-Madison? If yes, please describe ...

## Microaggressions - examples

"Use of 'what my wife does' by a senior male faculty member to explain his stance on a situation with a young female scientist."

"I have heard a faculty member refer to graduate students as 'girls.' I remarked that this language was not appropriate."

"After working very hard to recruit an assistant professor, I made the case to the department and they accused me of 'having a crush on him."

Study of Faculty Worklife, UW-Madison, 2012 "In the last 12 months, have you personally experienced or witnessed unconscious or implicit bias at UW-Madison? If yes, please describe ... "If the problem is unconscious and unintentional, What can I do about it?"

"The vast majority of people try to overcome their stereotypic preconceptions."

> Duguid & Thomas-Hunt, (2015). *J. Applied Psychology* 100(2): 343-359.

## 6 STRATEGIES to Minimize Implicit Bias

• Question your own objectivity

- Stereotype replacement
- Counter-stereotypic imaging
- Individuating
- Perspective-taking
- Increasing opportunities for contact

### Question your own objectivity

Replace your self-image as an objective person with recognition and acceptance that you are subject to the influence of bias and assumptions

Reflect on your own judgments and interactions and assess whether bias/assumptions played a role Uhlmann and Cohen, "I think it, therefore it is true: Effects of self-perceived objectivity on hiring discrimination," Organizational Behavior and Human Decision Processes, 104;2 (2007): 207-223

#### Stereotype Replacement

- Recognize stereotypical portrayals in society or your environment
- Challenge the fairness of the judgment or portrayal and replace it with a non-stereotypical response

### Counter-Stereotype Imaging

- Regulate your responses/judgments by imagining counter-stereotype examples
- Recognize or increase the visibility of counterstereotype examples in your domain.
  - Eg: Photographs on walls in classrooms and hallways do they reflect diversity; Examples used in text books and classrooms – do they reflect the diverse interests of students.
  - Departmental seminars/conferences are invited speakers from diverse groups within the field.
  - Leadership positions within the department; Committee assignments
  - Awards & recognition

## Individuate (instead of generalizing)

- Obtain more information on specific qualifications, record of performance, personality, and other attributes of an individual before making assumptions/judgments.
- Practice making situational attributions rather than dispositional attributions
  (E.g.: She had to leave the meeting early, because she has a presentation to deliver vs. she had to leave because she's a mother and has to pick her children up from school.)

- Perspective Taking recognize and respect the perspectives of others
  - Adopt the perspective (in the first-person) of a member of a stigmatized group
    - For example, imagine what it would be like to...
    - Have your abilities repeatedly called into question
    - Not be offered opportunities because of assumptions about what fields you will like
    - Not receive the same rewards and recognitions as similarly deserving peers

- Increase opportunities for contact with members of underrepresented groups
  - Greet and engage professionally with members of underrepresented groups presenting at or attending academic conferences
  - Pursue opportunities for collaboration
  - Engage in outreach work with minority communities
  - Mentor and advocate for students and colleagues from underrepresented groups.

## 6 STRATEGIES to Minimize Implicit Bias

• Question your own objectivity

- Stereotype replacement
- Counter-stereotypic imaging
- Individuating
- Perspective-taking
- Increasing opportunities for contact

# Creating a welcoming & inclusive department climate

- Treat all individuals w/ respect consideration & politeness
  - Establish a policy, standards, or expectations for interpersonal interactions
  - Promote these by personal example
- Hold department members accountable for violations
- Actively promote an inclusive community, do so by example
- Recognize and value the work of department members
- Communicate openly, honestly, and effectively

# Creating a welcoming & inclusive department climate

- Promote professional development for faculty, staff, and students
- Encourage balance between work and family or personal responsibilities
- Respond to illegal behaviors and complaints about demeaning, sexualizing, or condescending language and behavior





# Creating a welcoming & inclusive department climate

- Not necessarily easy
- Awareness, motivation, effort and a sustained commitment are essential
  - Expect that you may slip up
  - Stay committed
- Strategies we provided are powerful tools to combat implicit biases and improve climate





## CONCLUSION

"The fact that automatic and frequently unconscious processes are in play reduces blame but not responsibility."

van Ryn et al. (2011)

## **EXTRA SLIDES**

# What traits do you associate with being a leader?

Bias in Evaluation of Leadership/Competence "Think-manager-think-male phenomenon"

#### **Prescriptive Gender Norms**

"Leader"



- Strong
- Decisive
- Assertive
- Tough
- Authoritative
- Independent



#### Women

- Nurturing
- Warm
- Nice
- Supportive
- Understanding
- Sympathetic

## Leadership is a sex segregated occupation

#### > Locally:

- Women = 53% UW students.
- Women = 5 deans out of 13 schools/colleges (includes nursing and human ecology which was home economics).

### Nationally:

- Women = 51% population, never had a woman president.
- 4.6% of CEOs of fortune 500 companies are women.
- 50% women physicians in pediatrics since 1980, but only 10% department chairs are women.





TR FOR WOMFN'S

## Women experience double bias

- Stereotypes disadvantage women from being seen as competent in male dominated fields like medicine, science and engineering.
- Stereotypes disadvantage them from being seen as competent leaders.
  - Pursuit of leadership in medicine, science and engineering positions them to face a double bias.





## **Evaluation of leadership competence**

Bias is pervasive.

#### Experimental Evidence: Students seated around a table – Who is the leader?

#### Porter & Geis 1981, 1983 Jackson, Engstrom & Emmers-Sommer, 2007











