Forewarned is Forearmed:
An Evidence-Based Approach to Advancing Women in Academic Medicine

American College of Cardiology
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Objectives for today

- Review some of the issues
- Introduce some key constructs from social psychology that account for the tenacity of gender bias
- Apply constructs to a representative case
- Review some effective interventions to reduce the application of gender bias

Tremendous gains in medicine

- In 2007-08, women comprise:
  - 49% of medical students
  - 45% residents & fellows
  - AMCs
    - 34% faculty
    - 12% chairs
    - 10% deans
  - 25% NIH R01 applicants and recipients

Gender issues remain in medicine

- Research = pathway to leadership in academic medicine
  - Women are more likely to be clinicians and educators Tesch et al., JAMA, 1995; Wright et al., Acad Med, 2003
  - Women more likely to be assigned "institutional housekeeping" Bird & Wang, NSWA, 2004
- Gender-based and frank sexual harassment remain prevalent Shiffman et al., JAMWA, 1995; Frank et al., Arch Intern Med, 1998
- Women physicians earn less with comparable productivity Wright et al, Acad Med, 2003; Ash et al., Acad Med, 2002
- "Climate" less supportive of women's careers Foster et al., Acad Med, 2000; Carr et al., JWH, 2003

Gender issues in Cardiology

- Fellows: 42% men, 18% women
  - 11% EP; 9% interventional
- Women more likely:
  - Noninvasive (33% vs 21%) and less likely interventional (11% vs 29%) (same as 1996)
  - In academics (49% vs 30%) and less pvt practice (35% vs 56%)
  - Pediatric cards (15% vs 6%)
  - To report gender discrimination (69% vs 22%) (same as 1996)
- Women less satisfied with pay (63% vs 72%)

Poppas, Douglas, et al., JACC, 2008

Case Study

The Cardiovascular Institute for Super Science (CISS) issued a program announcement for the second year in a row seeking grant proposals for high risk research with the potential for major impact on cardiovascular disease.

One criterion for review is whether applicants have the potential for scientific leadership. This prestigious, 2 million dollar award goes to a single recipient.

Case Study – Dr. Leroy

Assistant Professor Dorinne Leroy was a finalist for this award and was invited for an interview. Her work is interdisciplinary, spanning both social and biological sciences. As she walked down the hall of the administrative building to her interview, she passed 15 portraits of previous senior CISS scientists, all of whom were white males.

A female staff assistant greeted Dr. Leroy and escorted her into the room with 5 men and 1 woman seated at a large table. Although the interview was pleasant, she felt unduly nervous and did not think she performed at her best.

Case Study – Dr. Leroy

Dr. Leroy received a letter several days after her interview informing her that she had not been selected for the award. The letter indicated that her research was deemed too broad and that reviewers felt she was a little too early in her career for this award.

Dr. Leroy was somewhat surprised by this because the previous year the award was given to Dr. Jason Priestley, a cardiologist at Prestigious University, whose work is exceptionally broad and interdisciplinary – even more so than Dr. Leroy's.

Case Study – Dr. Leroy

The award this year went to Dr. Richard Dare, a colleague of Dr. Leroy's. Dr. Dare's research is in a narrow area in molecular electrophysiology.

Dr. Dare and Dr. Leroy had been fellows together at the renowned Ichiban Center for Cardiovascular Research and their career benchmarks have largely been parallel – faculty appointments in the same year at comparably ranked major research universities, successful R01 proposals from NHLBI in the same year, and similar publication rates in journals of comparable impact.

"Are you just pissing and moaning, or can you verify what you're saying with data?"

Constructs:

1. Social Categories
2. Expectancy Bias

Gender is a Social Category

- Sex is biological (xx = female; xy = male);
  - Gender is socially constructed
- Social categorization
  - People assigned to groups based on common attribute
  - Stereotyping can emerge if most members share certain characteristics

- Biology irrelevant to most professional roles occupied by men and women
  - Men and women continue to have different *social roles* outside the workplace
  - These social roles can influence gendered reactions and interactions in the workplace

Expectancy Bias:

Expecting a certain behavior or characteristic based on assumptions about a *social category*

- Wisconsinite = likes cheese
- Cardiologist = male
- Interventional cardiologist = very male

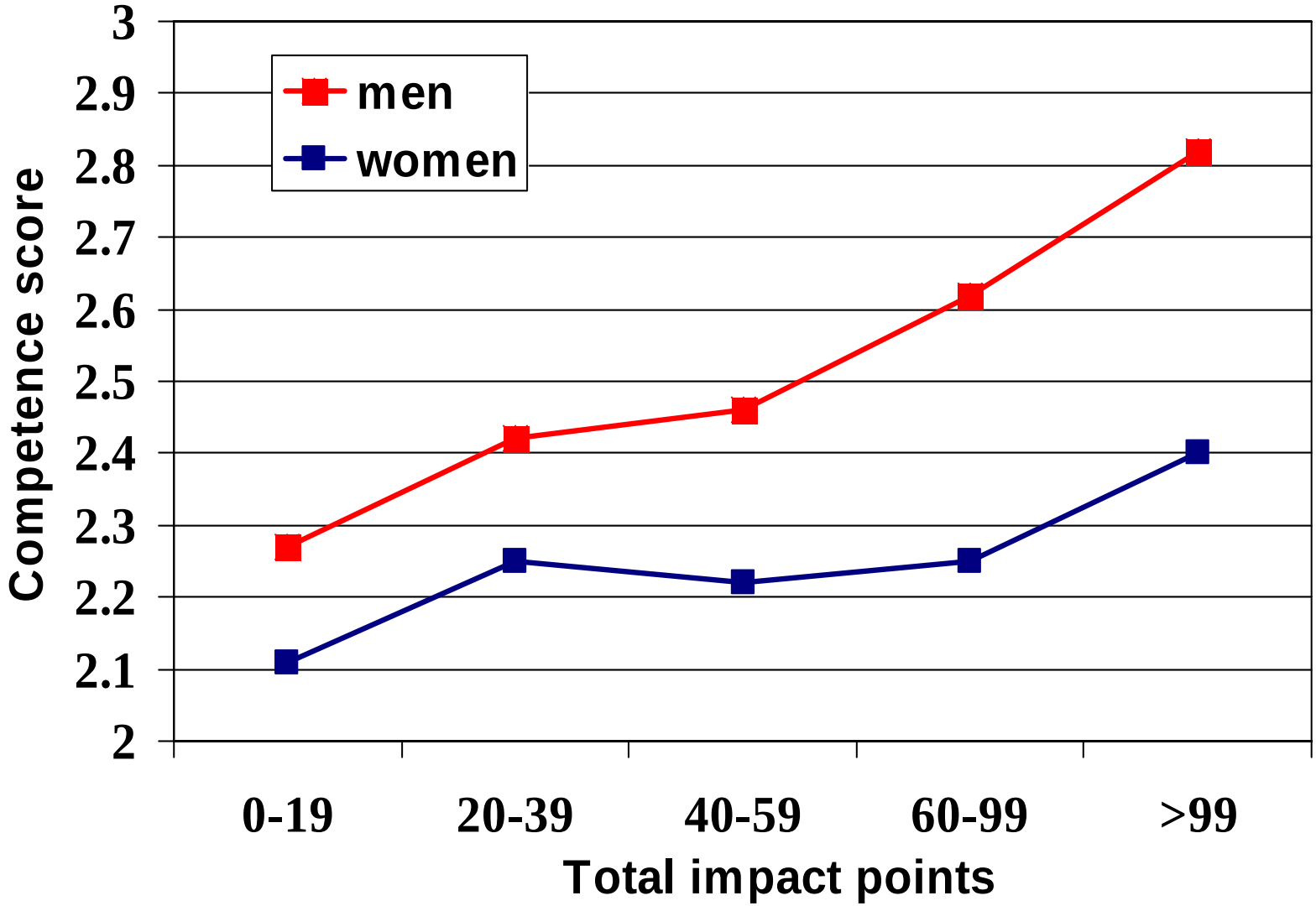
Expectancy bias can distort our assessment of individuals who are members of the stereotyped group

If expect men to be better scientists, they are

- 114 applications for prestigious research postdocs to Swedish MRC (52 women)
- Reviewers' scores vs standardized metric from publication record = impact points
- Women consistently reviewed lower, especially in "competence"
- Women had to be 2.5x as productive as men to get the same score
- To even the score, women needed equivalent of 3 extra papers in a prestigious journal like Science or Nature

Wenneras and Wold, Nature, 1997

Wenneras and Wold, Nature, 1997



Expectancy Bias = Academic work done by men better than work done by women

- Curriculum vitae sent to 238 academic psychologists (118 male, 120 female)
- Randomly assigned male or female name to cv
- Academic psychologists gave cv's with male names attached higher evaluations for
  - Teaching
  - Research
  - Service Experience
- More comments on cvs with female name
- Evaluators were more likely to hire the male than the female applicant

Steinpreis et al., Sex Roles 41: 509 1999

Construct:
Prescriptive Gender Norms

Prescriptive Gender Norms

DESCRIPTIVE: How men and women actually behave

PRESCRIPTIVE: Assumptions about the way men and women in the abstract "ought" to behave:

- Women: Nurturing, nice, supportive, helpful, sympathetic, dependent = *Communal*
- Men: Decisive, inventive, strong, forceful, independent, willing to take risks = *Agentic*

RELEVANT POINTS:

- Leaders, scientists, professors, cardiologists: Decisive, inventive, strong, independent
- Social penalties for violating prescriptive gender assumptions
- Unconscious gender stereotypes are easily and automatically activated and once activated readily applied

MALE

INTERVENTIONAL CARDIOLOGY
Highly Agentic

CARDIOLOGY
High prestige
Leadership
Status
Large reimbursement
Agentic

PEDIATRICIAN
Low prestige
Lower status
Less reimbursement
Communal

FEMALE

Evaluators

Construct:
Role Congruity for men and
*Role In*congruity for women in high authority positions

Penalties for success: Reactions to women who succeed at male gender-typed tasks

Heilman et al., J Applied Psychol 89:416-27, 2004

- 48 participants (20 men)
- Job description; Assist VP; products made suggested male (e.g. engine parts, fuel tanks). Male and female rated in two conditions:
  - Performance ambiguous
  - Performance clear

Competence Score:

Competent - incompetent
Productive - unproductive
Effective - ineffective

Achievement-related Characteristics:

Unambitious - ambitious
Passive - active
Indecisive - decisive
Weak - strong
Gentle - tough
Timid - bold
Unassertive - assertive

Likeability:

Likeable - not likeable

How much do you think you would like to work with this person?

Very much - not at all

Interpersonal Hostility:

Abrasive - not abrasive
Conniving - not conniving
Manipulative - not manipulative
Not trustworthy - trustworthy
Selfish - not selfish
Pushy - accommodating

Comparative Judgment::

Who is more likeable?
Who is more competent?

Results

Performance ambiguous

- Likeability and hostility comparable
- Men more competent
- Men more achievement-related characteristics

} Congruity of roles for men and *in*congruity for women

Performance clear

- Competence comparable
- Achievement-related characteristics comparable
- Women less liked
- Women more hostile

} Penalty for gender role violation

Why Are Women Penalized for Success at Male Tasks?: The Implied Communality Deficit

Heilman & Okimoto J Apppl Psychol 92:81-92, 2007

- Similar design – evaluating VP's in male-gendered position
- Memo from CEO introducing each VP; sentence varied in last paragraph:
  - Communal ("caring and sensitive" to employees; encourages "cooperation and helpful behavior")
  - Positive non-communal ("worked hard to maximize employees' contributions")

Results

- No effect of participant sex
- Positive non-communal or no information:
  - Women vs men
    - Less likable
    - More hostile
    - Less desirable as boss
- Communal information
  - Men - no effect
  - Women vs men
    - More likable
    - Comparable hostility and boss desirability

Heilman & Okimoto J Apppl Psychol 92:81-92, 2007

Construct:
Redefining Merit to Justify Discrimination

Redefining Merit to Justify Discrimination:

Adjusting the value of specific credentials that a candidate of the desired gender happens to have

Constructed Criteria:
Redefining Merit to Justify Discrimination
Uhlmann and Cohen, Psychol Sci, 16: 474-480, 2005

- Mock hiring situation – 3 studies
- Male and female applicants with identical credentials
- Police Chief – criteria constructed to favor male applicant
- Women's Studies Professor – criteria constructed to favor female applicant
- Self-perceived objectivity predicted gender bias

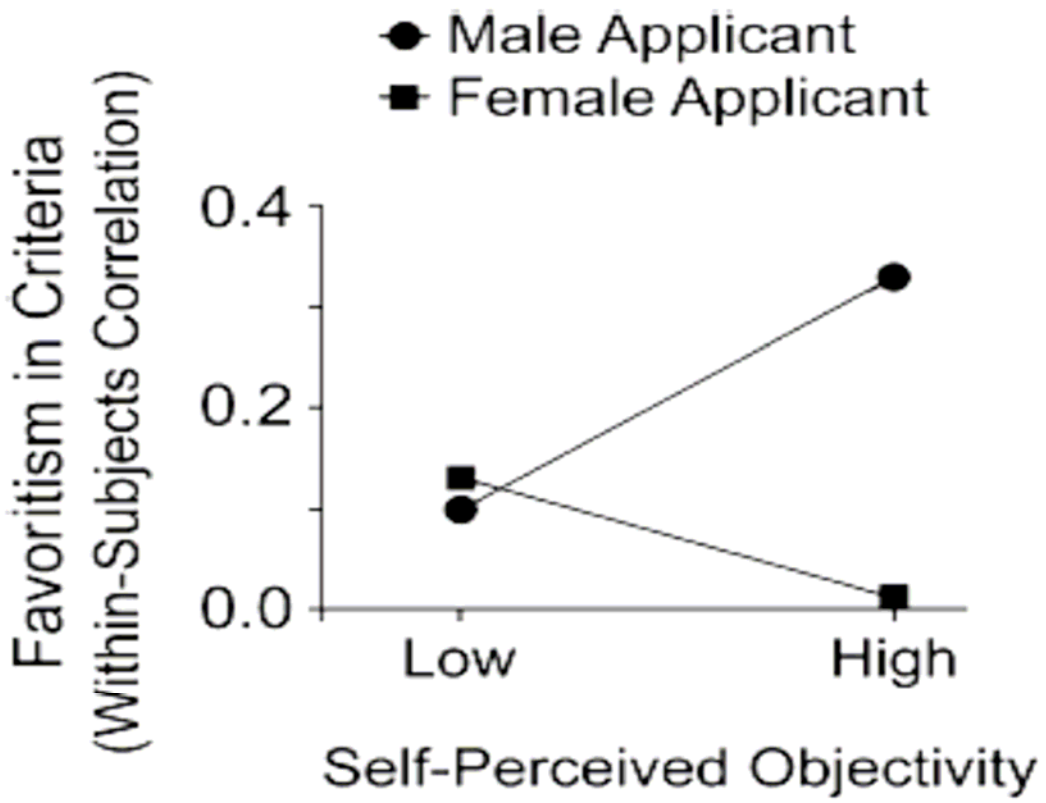


Fig. 2. Results from Experiment 1: the interaction of applicant's gender and self-perceived objectivity in predicting biased criteria. Low self-perceived objectivity is defined as one standard deviation below the mean; high self-perceived objectivity is defined as one standard deviation above the mean. Higher numbers indicate greater favoritism toward the applicant.

Study 3 -

- Half of the evaluators rated importance of criteria *before* seeing applications (commitment vs no-commitment)
- No-commitment: Criteria constructed to favor male applicant
- Commitment: Male and female applicants – similar hiring evaluations

Uhlmann and Cohen, Psychol Sci, 16: 474-480, 2005

Construct:
Shifting Standards of Reference

Shifting Standards of Reference:

Occurs when reliance on a group trait or stereotype leads to evaluation using a different referent standard (e.g.,strong, for a woman; sensitive, for a man)

Shifting Standards of Reference cause cognitive distortions in judgment

- Height of men overestimated and women underestimated despite standard reference
  Nelson, Biernat, Manis, J Pers Soc Psychol 25: 356-71, 1990
- Woman judged *lower* than men on actual wages but *higher* in financial success Biernat, et al.,J Pers Soc Psych 60:485, 1991
- Women applicants as likely to be shortlisted but less likely to be hired for male gender-typed job
  Biernat & Fuegen, J Soc Issues 57:707-724, 2001

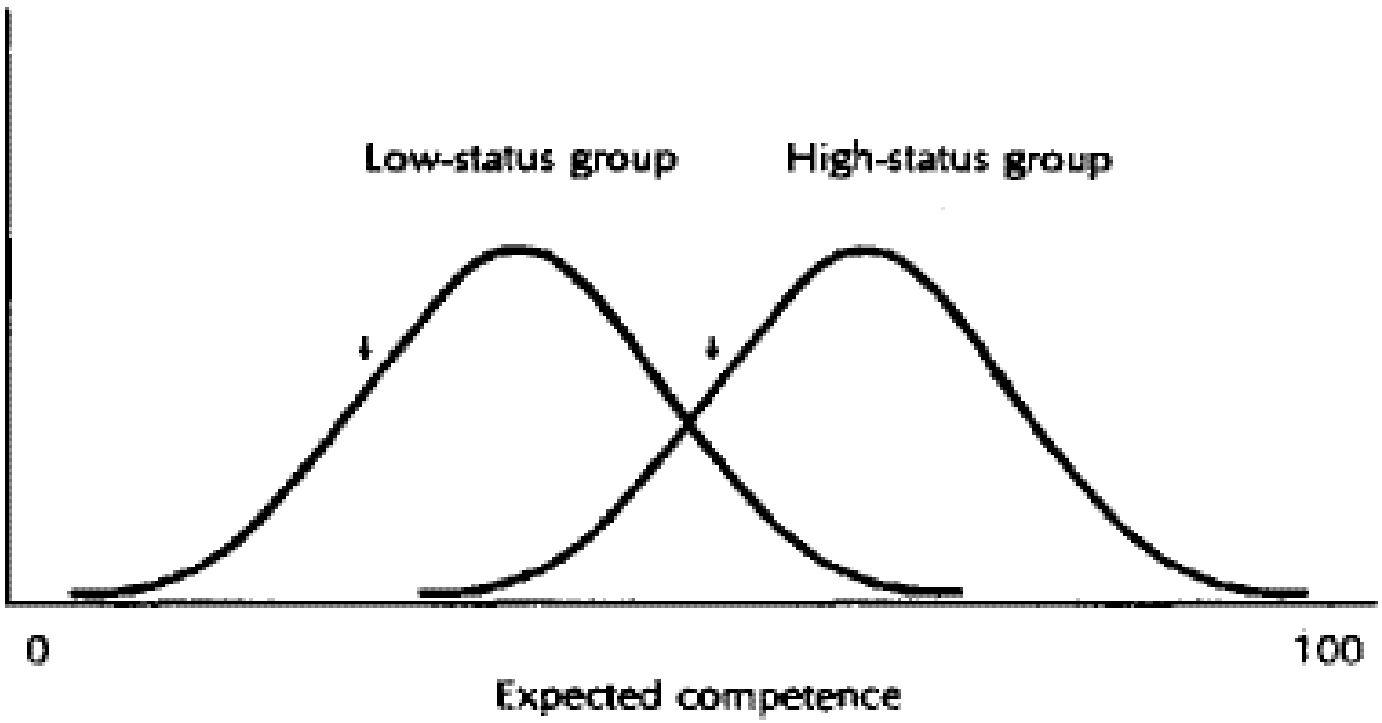


Figure 1. Schematic depiction of stereotyped representation of competence and minimum-standard levels for low- and high-status groups.

Constructs:

1. Gender Priming
2. Stereotype Threat

- **Gender Priming:** “Priming” an individual with words, pictures, or media images that align with gender stereotypes promotes gender bias in subsequent behavior

- **Stereotype Threat:** A member of a social category about which a negative stereotype exists can underperform relative to his/her ability if being a member of the stigmatized group is made salient

Clearing the Air: Identity Safety Moderates the Effects of Stereotype Threat on women's Leadership Aspirations

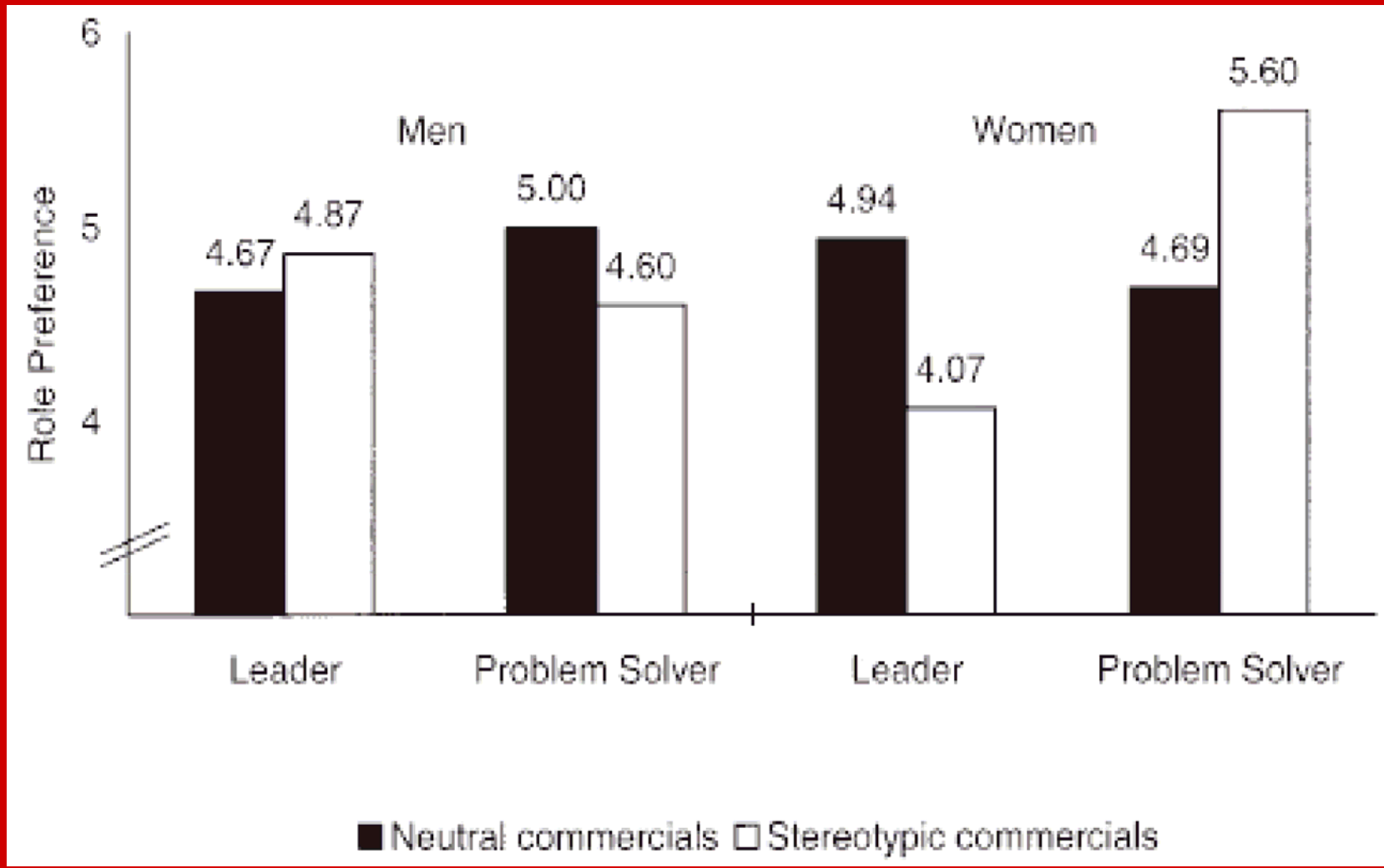
Davies, Spencer &Steele, J Pers Soc Psych 88:276-287, 2005

- 61 Ss (30 M, 31 F)
- Gender Priming = viewed commercials that reinforced female gender stereotypes or neutral
- Stereotype Threat = women are less able to lead
- Asked to select role as "leader" or "problem-solver" in a subsequent group task

Results

- Men in all conditions and women after neutral commercials
  - No clear role preference
- Women after gender priming
  - Strong preference for problem-solver rather than leader

Davies, Spencer &Steele, J Pers Soc Psych 88:276-287, 2005


6
5
4
Role Preference
Men
Women
4.67
4.87
5.00
4.60
4.94
4.07
4.69
5.60
Leader
Problem Solver
Leader
Problem Solver
Neutral commercials
Stereotypic commercials

Study 2 –
Was it stereotype threat?
Impact of counteracting the threat?

- 116 Ss (58 F, 58 M), similar design
- After viewing commercials
  - Response time to words on computer screen = female stereotype, neutral, nonwords
  - Randomized to read that *research shows no gender differences in performance of either task*

Davies, Spencer &Steele, J Pers Soc Psych 88:276-287, 2005

Results

- Women with female-stereotype priming:
  - Female stereotype activated (shorter time to identify female-stereotype adjectives)
  - Less preference for leader; greater preference for problem solver role (same as Study 1)
  - Level of stereotype activation predicted level of leadership aspiration
- Affirming sentence eliminated stereotype threat for leader selection

Davies, Spencer &Steele, J Pers Soc Psych 88:276-287, 2005

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"willing to take risks" strongly associated with male. Bem, 1974

Ambiguous performance criteria favors men. Heilman, 2001, 2004

Shifting standards; women short-listed but not hired. Biernat & Fuegen, 2001

Mental model of leadership strongly male. E.g. Sczesny et al., 2006

Role congruity for men – high prestige, big budget. Eagly & Karau, 2002

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Potential for gender stereotype priming: scientists are men; women are in support roles. Banaji et al. 1993

Activation of stereotype threat: women are not as good as men at science or leadership. Davies, et al. 2005

Case Study – Dr. Leroy

Reconstructing merit to justify discrimination. Uhlmann & Cohen, 2005

Dr. Leroy receiv ater indicating that she had not been selected for the award. The letter indicated that her research was deemed too broad and she was a little too early in her career.

Dr. Leroy was somewhat surprised by this because the ard was given to Dr. Jason us University, a scientist whose broad and interdisciplinary – even more so than Dr. Leroy's.

Women scientists 2.5X more productive for same competency rating. Wenneras & Wold, 1997

Case Study – Dr. Leroy

The award this year went to Dr. Richard Dare, a colleague of Dr. Leroy's. Dr. Dare's [illegible] narrow area in molecular electrophys[illegible]

Dr. [illegible]n fellows to [illegible] ren[illegible]for Cardiovascular Research and their career benchmarks have largely been parallel – faculty appointments in the same year at comparably ranked major research universities, successful R01 proposals from NHLBI in the same year, and similar publication rates in journals of comparable impact.

Her success may imply communality deficit and unlikability. Heilman, 2004

Accomplishments of academic psychologists rated lower if performed by a woman. Steinpreis et al., 1999

Dr. Leroy's case – suggestions for CISS

- Examine language for gender priming
- Change "potential for scientific leadership" to "examine past performance as a predictor of success"
- Commit to value of type of research a priori to reduce reconstruction of merit

Dr. Leroy's case – suggestions for applicant

- Before applying:
  - Efforts to individuate and disconfirm negative female stereotypes
    - Letters of endorsement from top senior males
    - Emphasize agentic, award-congruent work but its impact on human health
    - Ongoing active attempts to network
- Before interview:
  - Learn how stereotype threat works and that research on leadership actually favors women as transformational leaders
  - Balance agentic style with friendliness
- After losing:
  - Move on …
  - Pick your battles carefully

In spite of our egalitarian goals, gender bias recurs

2004

NIH Director's Pioneer Award

Conditions that lead to application of gender bias:
Male semantic priming – "high risk research", "technological breakthroughs"
Rapid, unfamiliar review
Ambiguous performance criteria

Round 1 = 9/9 men

Conscious efforts to reduce application of implicit bias

Round 2+ = ≥25% women

2006

CTSA Awards

Conditions that lead to application of gender bias:
High prestige
Leader of leaders
Big budget
Lots of institutional power
Ambiguous performance criteria

Round 1 = 35 male PIs

Conscious efforts to reduce application of implicit bias

Round 2+ = ≥16% women

Carnes et al., 2005, 2006, 2007

Conclusion/Summary

- Women physicians & scientists have made tremendous advances but gender bias causes cognitive distortions that disadvantage women
- The subtlety of these distortions enables bias against women to enter decision-making processes without being overt
- Physicians would be well served to approach the issue of gender bias with the same reverence for evidence-based medicine that they demand in their clinical practice and teaching

Questions?