Implicit Stereotype-based Bias:
Potential Impact on Faculty Career Development

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Topics to cover

- Origins of implicit bias (focus on gender)
- When and how implicit bias may impact women's academic career advancement
- Evidence-based strategies to reduce the impact of implicit bias

Evidence of implicit bias

- 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)
- Women physicians who submit R01 proposals to NIH are significantly less likely than men to be funded (Ley & Hamilton Science, 2008)
- Women faculty more likely assigned "institutional housekeeping" (Bird et al., NSWA Journal, 2004; Shollen et al., Acad Med, 2009)
- Letters of recommendation for women med school faculty are shorter, have more references to personal life, and contain fewer "outstanding" descriptors (Trix & Psenka, Discourse & Soc, 2003)
- When the gender of the author is known, women are less likely to have their publications accepted (Budden et al, Trends Ecol Evol, 2008)
- "Goldberg" designs indicate that work performed by women rated of lower quality than the work performed by men regardless of gender of rater (Isaac et al, Acad Med 2009)

Characteristics of Implicit Biases

1. Ordinary
   - Stem from our natural tendency to form associations to help organize our social worlds
2. Pervasive
   - Prevalent among men and women, blacks and whites, young and old, etc.
3. Learned from culture
   - Reflect the “thumbprint of culture” on our minds
4. Often conflict with consciously endorsed beliefs
   - Dissociation between implicit and explicit responses

Characteristics of Implicit Biases

5. Consequential
   - Predict behavior better than (and often at odds with) explicit measures
   - Constrain the opportunities of targets of implicit bias

Gender Stereotypes
Common assumptions about how men and women behave

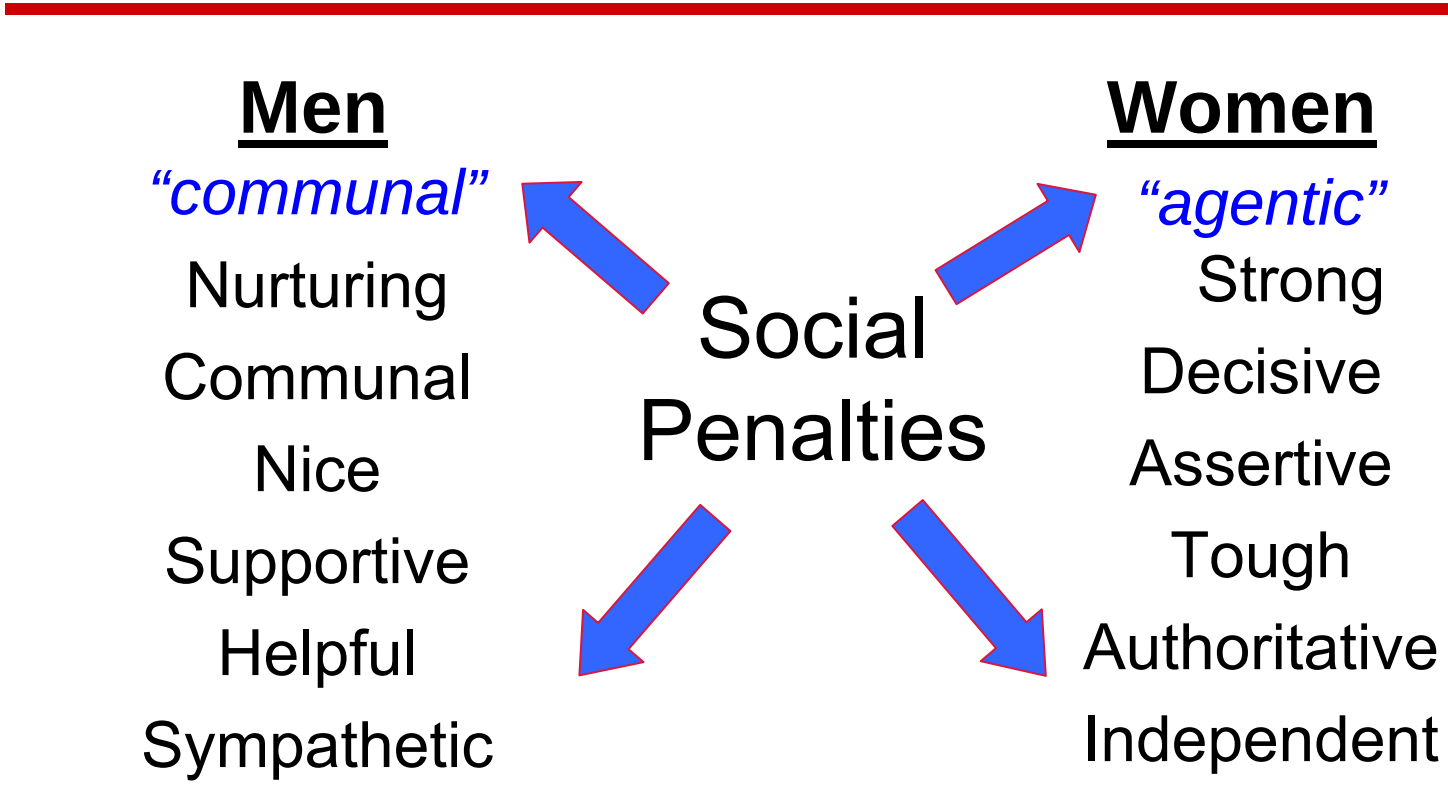
- Men are *agentic:* Decisive, competitive, ambitious, independent, willing to take risks
- Women are *communal*: nurturing, gentle, supportive, sympathetic, dependent
- Lead to *expectancy bias* and assumptions of *occupational role congruity*
- *Social penalties* for violating prescriptive gender norms

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

Men		**Women**
"agentic"		*"communal"*
Strong	"Leader"	Nurturing
Decisive	?	Communal
Assertive		Nice
Tough		Supportive
Authoritative		Helpful
Independent		Sympathetic

"Think-manager-think-male phenomenon"

Schein VE, J Social Issues. 2001;57(4):675-688.



Agentic behaviors: valued in men; prohibited for women

When might implicit biases work against women's advancement in academic medicine?

- Socialization of women toward "communal" specialties and lower status activities
- Women physicians need to navigate the terrain between "giving orders" with gender norms for behavior
- Gender bias in evaluation for high status positions and rewards
  - Evaluation for tenure
  - Awarding grants

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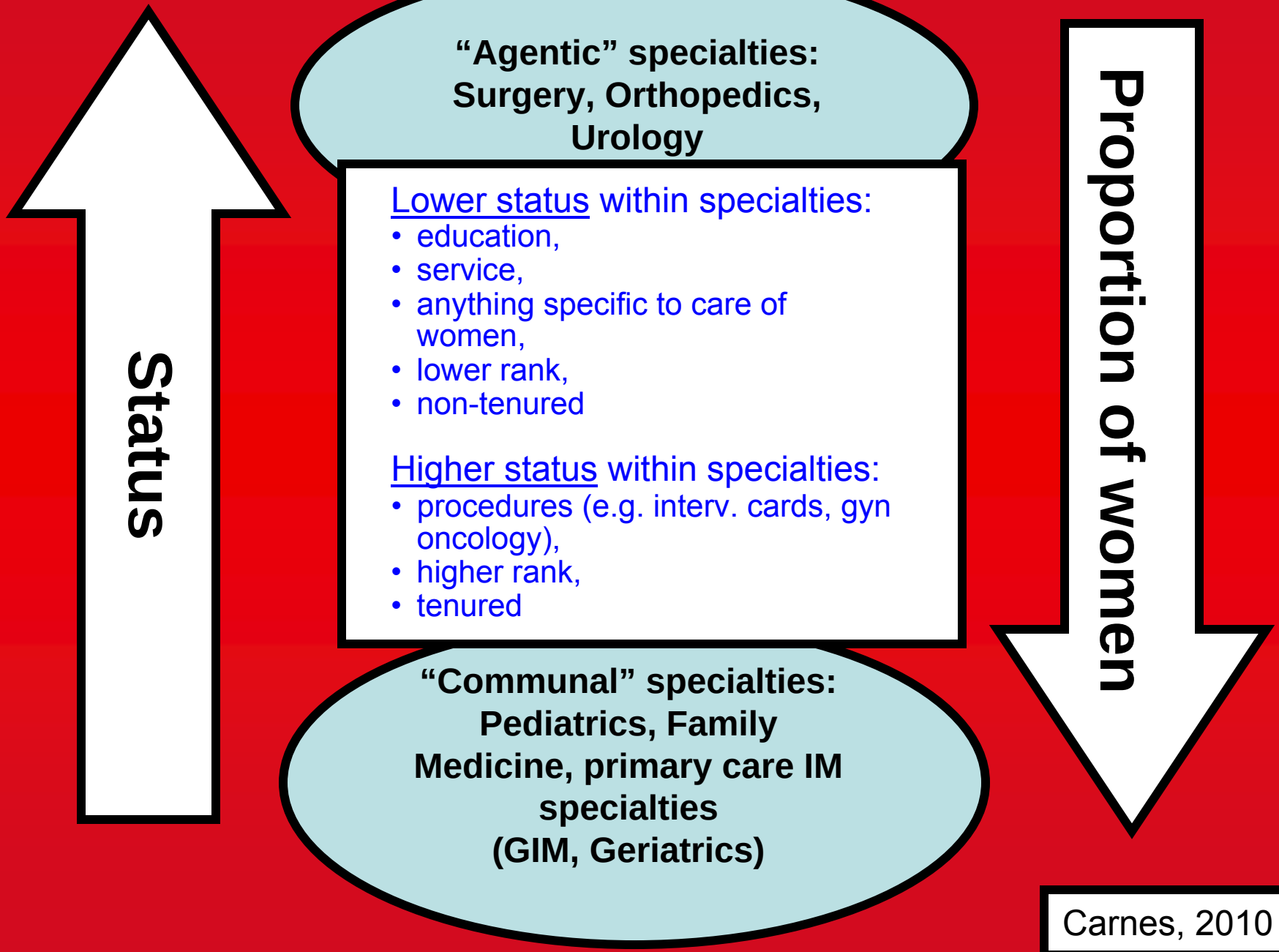
Gender is a powerful status cue:

male >female


Status
"Agentic" specialties: Surgery, 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 (GIM, Geriatrics)
Proportion of women

Carnes, 2010

Medical School Performance Evaluations: Does gender affect words and descriptors?

- Medical Student Performance Evaluation (MSPE);
  AAMC attempt to standardize the “dean’s letter”
- 297 MSPEs of medical students applying to a diagnostic radiology residency:
  - 227 male and 70 female students
  - 151 male, 140 female, 6 unknown authors (all Assoc. Dean or comparable)
- Word categories, frequencies, and context analyzed

Gender differences

- Male authors wrote shorter letters (209 words) (p =.014)
- Main effect student gender (MANOVA; Wilkes λ, p=.046)
  - Interaction of author gender with student gender (p = .077)
  - Main effect of author gender (p = .071)
- Differences in 3 word categories (univariate F tests):
  - positive emotion (*good, excellent, honors, eager, enthusiastic*)
    - male students with female authors lowest (p = .006);
  - motion *(pass, received, following, took, step, attending, advanced)*
    - female students with female authors > male students with male authors (p = .027)
  - space (*high, level, above, where, over)*
    - male students with female authors > male students with male authors (p = .007)
- No difference NRMP ranked by author-student gender (26 M, 9 F)
  - Ranked students: "standout" (p = .002) and "positive emotion" (p = .001)

Factor analysis – different patterns of words and descriptors in the 4 author-student gender pairs

Factor synthesis

- Male students:
  - Work eagerly, responsibly, and above expectations toward becoming an outstanding, insightful specialist
- Female students:
  - Work hard and enthusiastically; ask insightful questions befitting a specialist but would be exceptional in family medicine where they can take less initiative and responsibility

Male and female students socialized toward different specialties?

- Female students with female authors: Family medicine correlated with standout adjectives
- Male students with male authors: Family medicine absent
- Male students with female authors: Family medicine negatively correlated with ability and insight
  - “[he] really surprised us! …“although [he] received highest honors on [his] family medicine rotation, surely [his] finest performance was on surgery: … [he] was outstanding - spoke with families, got consent forms signed, was extremely aggressive….”

Conclusions

- Our results suggest that gender can override attempts at standardization of medical student performance evaluations
- These differences did not appear to affect the ranking of individual students
- The pattern of descriptors suggests that women may be subtly socialized toward family medicine which requires further exploration

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Does gender affect resident experience with directing patient care?

Mixed methods

- Survey:
  - 65/100 UW Medicine Residents responded
  - Vignettes with varying degrees of assertive responses
  - Self-assessment of stress in giving orders
  - Rating of factors that affect effectiveness in directing patient care
- Semi-structured interview:
  - 16 residents

Bartels et al. JWH, 17:1615-21, 2008

Survey results

- Male residents higher cumulative assertiveness score ($p=0.047$)
- Difference in self-reported stress by year of training ($p=0.008$) but not gender ($p=0.86$)
- 30% female and no male resident ranked gender as the greatest disadvantage in directing patient care ($p<0.01$)

Interviews

Congruent with gendered norms:

- Men more likely “authoritative” “confident” “assertive”
- Women more likely “reflective” “self-conscious”
- “Tone” noted to be important for women

Representative quotes:

- “I’ve seen men able to say things in just terrible tones, but it’s just accepted. Whereas if a woman tried that…” *Senior M*
- “It just didn’t seem right for me to tell people what to do, even if I was asking them in a nice way.” *Junior F*
- “Sometimes you’re afraid that you’ll be thought of as being bossy or too aggressive.” *Junior F*

Conclusion

Gender impacts the residency experience, especially for women in ways that are consistent with research.

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Semantic gender priming and tenure criteria?

- Top 25 ranked medical schools
- Tenure criteria from websites
- Scanned for “Leader”
- Slopes of regressions for annual % tenured women x 7 years
- “Leader” = OR 6.0 (1.02, 35.37) for slope below median compared to those without

Marchant, Bhattacharya, Carnes. J Woman’s Health, 2007

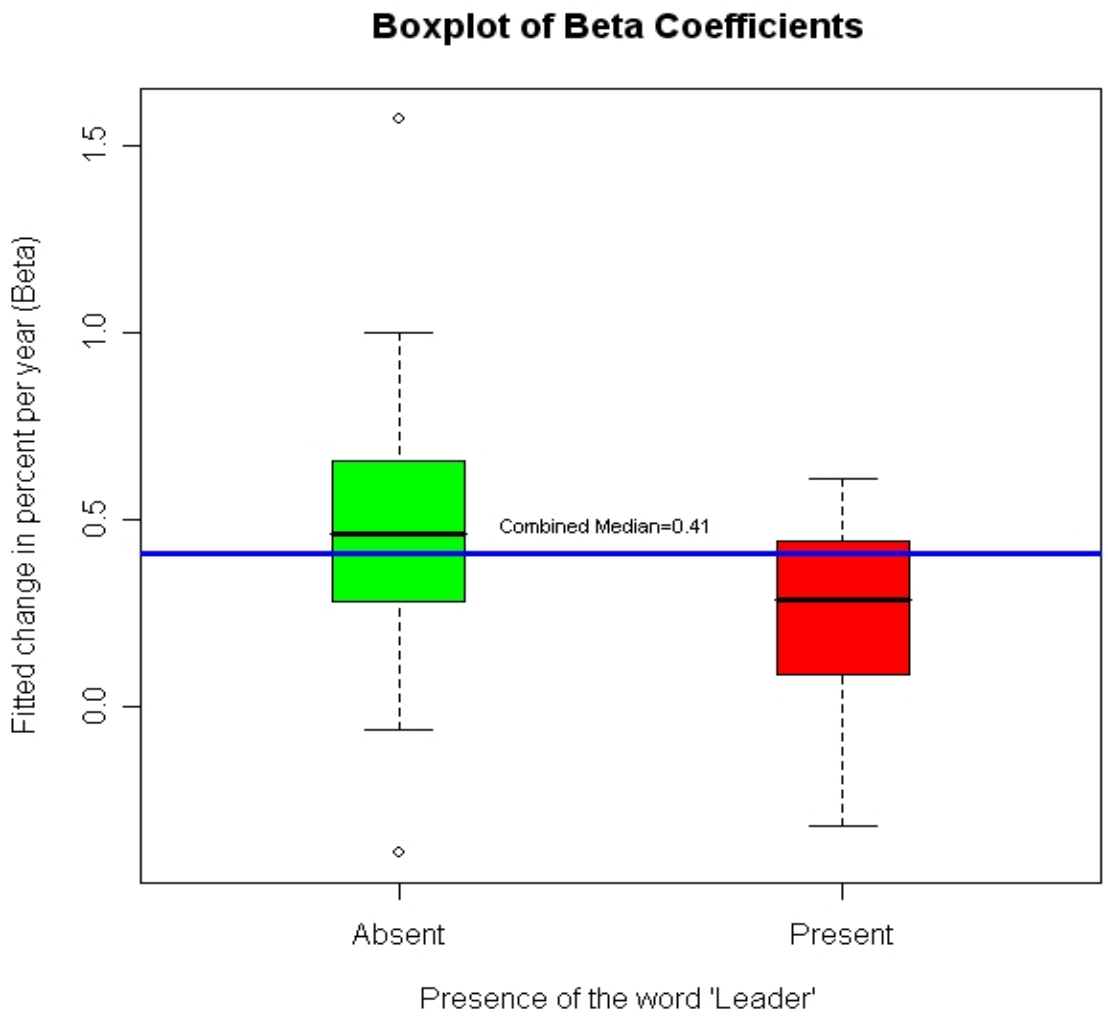


Figure 1. Box plots of beta coefficients (slopes of regression lines) for annual change in percent faculty who are tenured women over 7 years. Schools with the word “leader” in tenure criteria have significantly higher odds of having a slope below the median slope for all institutions (p =0.04).

Semantic gender priming and the NIH Director's Pioneer Award?

- 2004: 0 women out of 9
- 2005: 6 women out of 14 (43%)
- 2006: 4 women out of 13 (31%)
- 2007: 4 women out of 12 (33%)
- 2008: 4 women out of 16 (25%)
- 2009: 7 women out of 18 (39%)

Were women doing better science after 2004 or was there something else?

2004	≥ 2005
Emphasis on risk	
Risk-taking emphasized: • "exceptional minds willing and able to explore ideas …considered risky" • "take…risks" • "aggressive risk-taking" • "high risk/high impact research" • "take intellectual risks" • URL includes "highrisk"	Emphasis on risk removed: • "pioneering approaches" • "potential to produce an unusually high impact" • "ideas that have the potential for high impact" • "highly innovative" • URL no longer includes "risk"

Carnes et al. JWH, 2005; Carnes, Nature, 2006

Systematic Review of Interventions Affecting Gender Bias in Hiring

- 9639 from 9 electronic data bases
- 1920 abstracts screened
- 130 articles reviewed in full
- 27 met criteria:
  - After 1972
  - Randomized, controlled design
  - “Goldberg” paradigm (M and F with identical qualifications rated for employment outcomes)
  - Participants blinded to intent
  - Both genders in applicant pool and raters

Isaac, Lee & Carnes. Acad Med, 2009

What can institutions do to mitigate bias against women in hiring settings?

At least 1 RCT = level 1 evidence

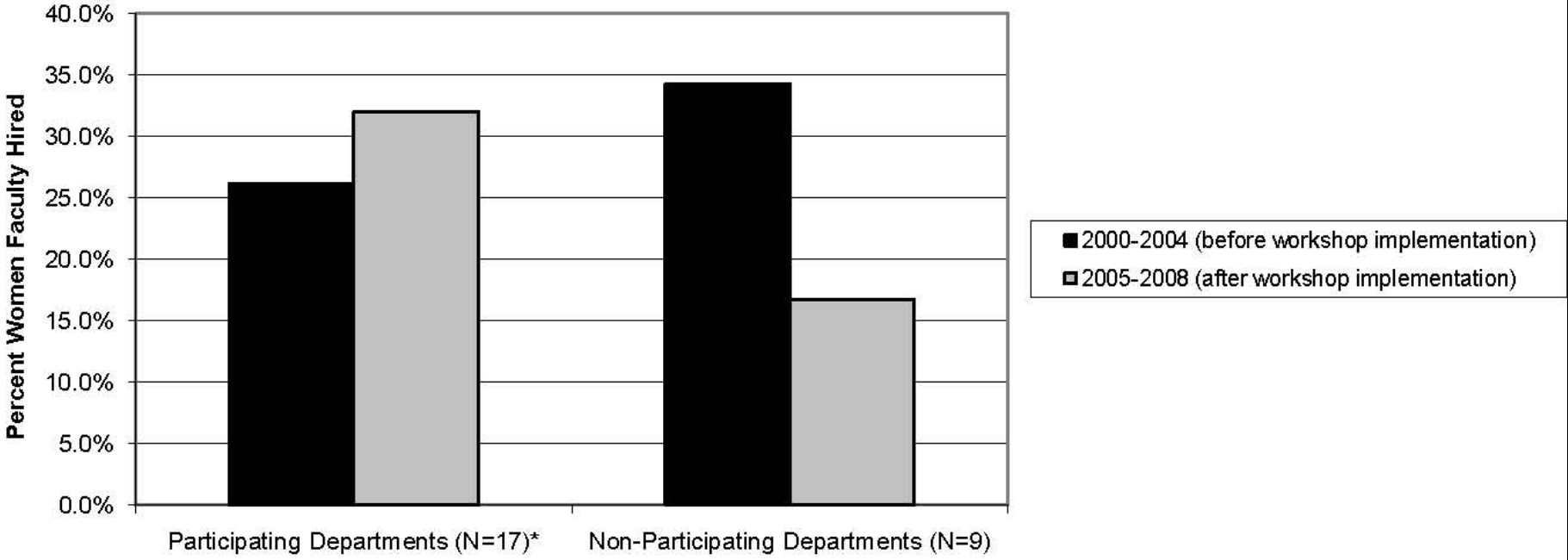
- Infuse environment with statements that research evidence shows equivalent gender competence in relevant roles
- Encourage raters to take adequate time
- Allow applicants to provide individuating evidence of job-relevant competency
- Work for applicant pool to have at least 25% women
- Do not ask about parenthood status
- Use structured vs unstructured interview questions
- Avoid man-suffix job titles (e.g. use chair rather than chairman)
- Use inclusion vs. exclusion strategy for selection from final list
- Implement training workshops for personnel decision-makers

Isaac, Lee, & Carnes. Acad Med, 84:1440-46, 2009

Searching for Excellence & Diversity

- Five Essential Elements of a Successful Search
  - Run an effective and efficient search committee
  - Actively recruit an excellent and diverse pool of candidates
  - Raise awareness of unconscious assumptions and their influence on evaluation of candidates
  - Ensure a fair and thorough review of candidates
  - Develop and implement an effective interview process

Figure 1. Percentage of New Women Faculty Hired in the UWSMPH by Any Workshop Attendance, 2000 – 2008



* Participating departments sent at least one faculty member to a workshop sometime between 2004-2007. Non-participating departments have sent no faculty to a workshop.

Sheridan et al., Acad Med, 2010

Review

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