

# Language and Women's Academic Advancement

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# Background: Gender and Behavior

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DESCRIPTIVE: How men and women actually behave

PRESCRIPTIVE: Unconscious assumptions about the way men and women in the abstract “ought” to behave:

- Women: Nurturing, nice, supportive, helpful, sympathetic, dependent
- Men: Decisive, inventive, strong, forceful, independent, “willing to take risks”

RELEVANT POINTS:

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

# Consistent story in field and experimental studies over several decades –

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- Women and the work performed by women receive lower evaluations than men and the work performed by men – even if the work is *identical* – multiple studies: e.g. Heilman, 2004; Wenneras and Wold, 1997; Steinpreis, 1999
- Sex of the evaluator makes no difference – i.e. *both* men and women give women lower evaluations – nearly universal
- Women are particularly disadvantaged at evaluation points advancing to high authority positions, especially elite leadership positions – multiple studies; e.g. Sczesny et al., 2006
- Women, but not men, who self-promote receive lower evaluations – Several studies; e.g. Rudman, 1998
- Those who think they have no biases provide the most biased evaluations – Uhlmann and Cohen, 2005

**We all have unconscious gender-biases and they would be predicted to disadvantage women in their career advancement in academic medicine**

## Conditions which activate gender bias in evaluation to the detriment of women

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- Time pressure and high cognitive load
- Small number of women in applicant pool or review group
- Ambiguous performance criteria for traditionally male position (e.g. “potential” “shows leadership”)
- “Feminine” appearance or scent (even among men)
- Linguistic Expectancy Bias: use of abstract rather than concrete language to describe gender-stereotypic behavior
- Semantic priming with gender-linked words

# Taking an Evidence-Based Approach: Interventions in at least one randomized, controlled study that mitigate bias

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Intervention	Example of study
Reduced time pressure and cognitive distraction during evaluation	Martell RF. J Applied Soc Psychol, 21:1939-60, 1991
Presence of a member of the social category being evaluated	Lowery et al. J Pers Soc Psych 81:842, 2001
At least 25% of the social category in the pool being evaluated	Heilman ME. Organ Behav Hum Perf 1980; 26: 386-395, 1980
Instruction to try to avoid prejudice in evaluation	Blair IV, Banaji MR. J Pers Soc Psychol 70:1142-1163, 1996
Counterstereotype imaging	Blair IV, Ma JE, Lenton AP. J Pers Soc Psychol 81: 828-841, 2001
Establishing the value of credentials before any applicant is seen to avoid “redefining” merit	Uhlmann and Cohen, Amer Psychol Assoc 16:474-480, 2005

# Language and Gender

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- Semantic priming
- Letters of recommendation
- Linguistic expectancy bias
- Language that ignores or blames women

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# Semantic priming activates unconscious gender stereotypes

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- Unrelated exercise: unjumble sentences where actions reflect *dependent*, *aggressive* or *neutral* behaviors; e.g.:
  - P alone cannot manage a
  - M at shouts others of
  - R read book by the
- “Reading comprehension” experiment with Donna or Donald engaging in dependent or aggressive behaviors
- Rated target on series of traits (Likert, 1-10)

## Banaji et al., J Pers Soc Psychol, 65:272 1993

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- Gender of evaluator made no difference
- Gender of target determined influence of semantic priming:
  - Neutral primes – Donna and Donald same
  - Dependent primes – only Donna more dependent
  - Aggressive primes – only Donald more aggressive

# NIH Director's Pioneer Awards

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- All 9 went to men in the first round (2004)
- In subsequent rounds, women received:
  - 2005 = 43%
  - 2006 = 31%
  - 2007 = 33%

Were women doing better science after 2004?

**2004**

**2005, 06, 07**

***Characteristics of target scientist and research***

**Risk-taking emphasized:**

- “exceptional minds willing and able to explore ideas that were 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”

***Description of research as technological***

**Technological advances highlighted as desirable:**

- “support the people and projects that will produce tomorrow’s conceptual and technological breakthroughs”

**Mention of technological breakthroughs removed; human health added:**

- “encourage highly innovative biomedical research with great potential to lead to significant advances in human health.”

# Semantic priming and tenure criteria?

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- 25 top research academic medical centers
- 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

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# Subtle gatekeeping bias – letters of recommendation

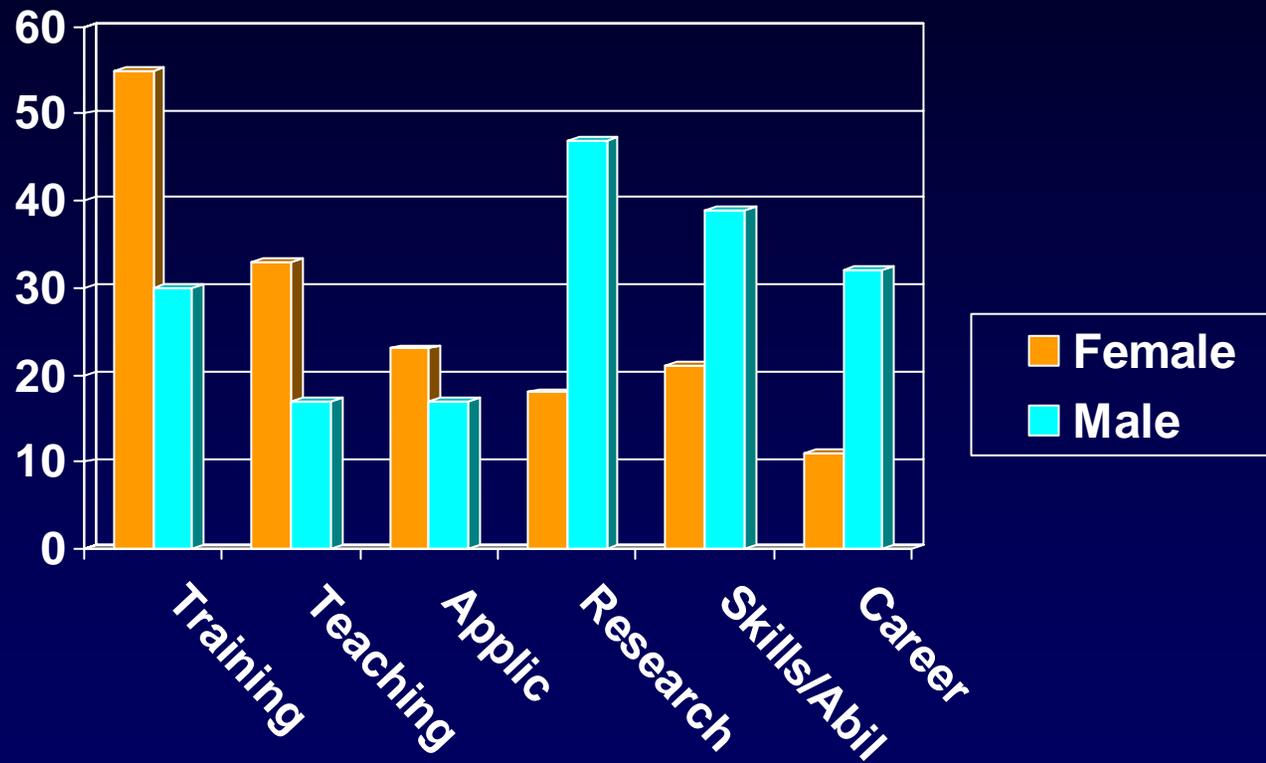
Trix and Psenka, *Discourse & Soc* 14:191 2003

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- 312 letters of rec for medical faculty hired at large U.S. medical school
- Letters for women vs men:
  - Shorter
  - 15% vs 6% of *minimal assurance*
  - 10% vs 5% with *gender terms* (e.g. “intelligent young lady”; “insightful woman”)
  - 24% vs 12% *doubt raisers*
  - *Stereotypic adjectives*: “Compassionate”, “related well...” vs “successful”, “accomplished”
  - Fewer *standout adjectives* (“outstanding” “excellent”)

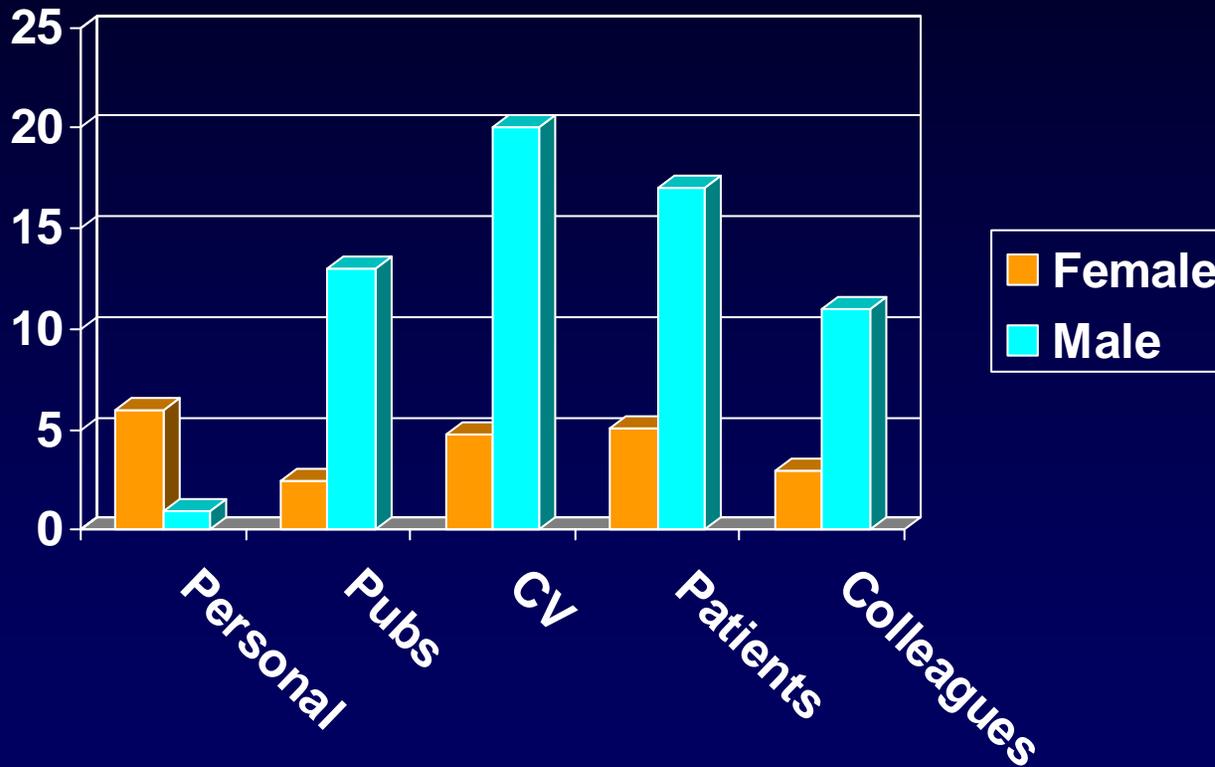
# Semantic realms following possessive (e.g. “her training”; “his research”)

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# Distinctive semantic realms following possessive

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# Linguistic Category Model

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- Levels of linguistic abstractness:
  - Level 1 – descriptive action verb
    - Most concrete, specific behavior
  - Level 2 – interpretive-action verb
    - More abstract, class of behaviors
  - Level 3 – State verb
    - More abstract, emotional state
  - Level 4 – Adjective
    - Most abstract, generalize across events

# Linguistic Expectancy Bias (LEB)

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Stereotype-congruent (i.e. expected) behavior is described more abstractly than stereotype-incongruent (i.e. unexpected) behavior

Stereotype	Concrete	Abstract
Men are better at lab science than women	“John dropped the beaker”	“Mary is clumsy in the lab”
Men are leaders	“She pulled together the proposal”	“He inspired the writing team”
Women are more communal than men	“Steve said hello to all the employees”	“Janet is nice”

# Abstract language reinforces and transmits stereotypes

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- Subjects: 33 Dutch undergraduates (18 women/15 men)
- Subjects asked to write 4 stories about a male or female friend behaving in pos and neg stereotypically male and female way
- Read other's stories
- Rate behavior stereotypically male, female, desirable, undesirable (Likert, 1-7)
- Dispositional inference vs. situational attribution
- Level of abstractness computed from verbs and adjectives

# Abstract language reinforces and transmits stereotypes

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- No effect of evaluator sex or desirability of behavior
- Writers:
  - Gender-congruent (expectant) behavior more abstract
- Readers:
  - Gender-congruent  $\Rightarrow$  more dispositional inference
  - Dispositional inference  $\Rightarrow$  accounted for by level of linguistic abstractness of the story

## Conclusion:

1. Gender stereotype congruent information is communicated at a higher level of abstractness than stereotype incongruent information
2. The use of abstract language appears to transmit gender stereotypes to recipients

# Abstract language reinforces and transmits stereotypes

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- Subjects = 50 Dutch undergraduates (16 M, 34 F)
- Stories stated concrete or abstract gender-congruent behaviors based on traits (Dutch Gender Identification Questionnaire):
  - Male: independent, handy, adventurous, technical
  - Female: careful, considerate, emotional, spontaneous
- Abstract stories led to stronger dispositional inferences regardless of content

**Conclusion: Language plays a subtle but significant role in transmitting and maintaining gender stereotypes**

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## NIH Extramural Nexus, January, 2007

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“The disproportionate *difficulty women have* as Principal Investigators of large grants was obvious in the first round of the Clinical and Translational Science Awards (CTSAs) applications, where none of the applicants were women.”

More correct: Institutions have difficulty recognizing women as leaders of large grants

# Clinical and Translational Science Awards (CTSA)

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- PI of CTSA = elite leader:
  - Enormous institutional power
  - Massive budget up to \$70 million
  - No previous performance criteria
  - Leader of leaders: CTSA subsumes several other independent programs

We predicted that it would be unlikely for women to be represented as CTSA PIs (Carnes and Bland, Acad Med, 2007);

All 35 applications had male PIs

Second round, issue more visible – 3/12 women PIs

# “Publish less” or “Are published less”?

“ Why do women scientists publish fewer papers than men?”

“Women scientists publish less than men scientists”

“Women publish less than men”

Women are the agents of action in these sentences.

# Double-blind review increases %women-authored publications

- Behavioral Ecology (BE) – initiated double-blind review in 2001
- Online data base 1997-2000 vs 2002-2005
  - Gender of 1<sup>st</sup> author by author name: F, M, UKN
- 1<sup>st</sup>-authored pubs
  - Women ↑ 8% (3x the increase in F PhDs)
  - Men ↓ 8%
- Behavioral Ecology and Sociobiology (BSE) – similar
  - No change
- 4 journals in ecology with comparable impact factor with single-blind review – no change

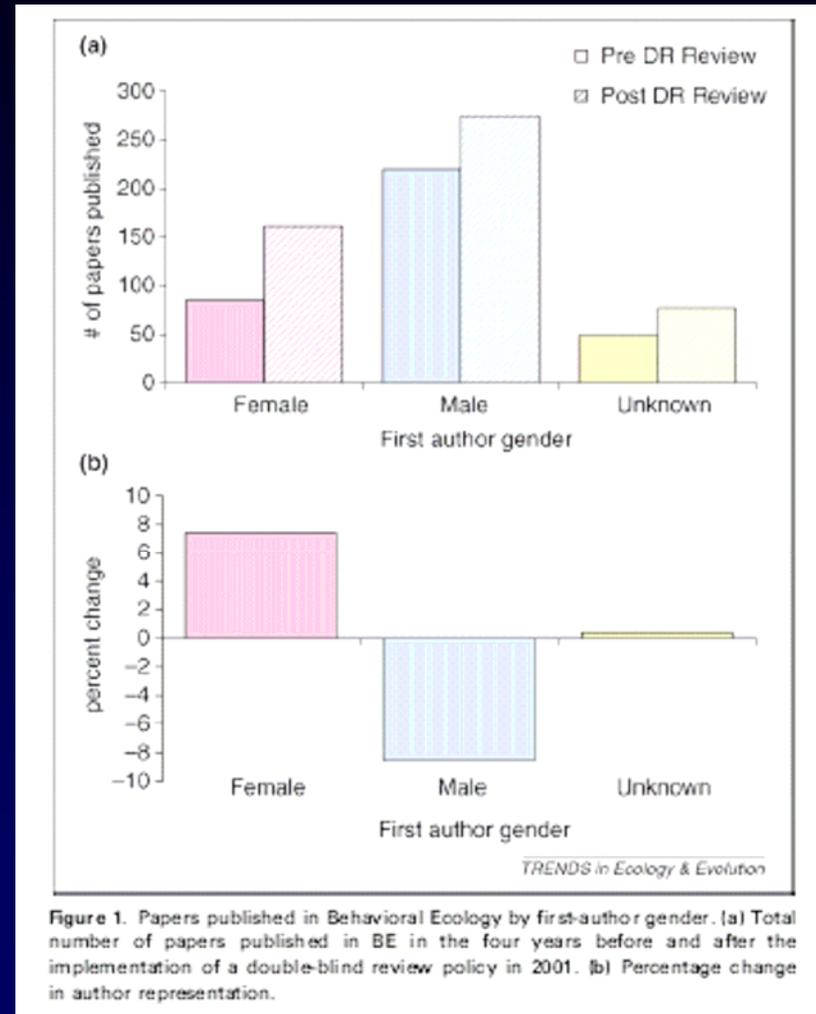


Figure 1. Papers published in Behavioral Ecology by first-author gender. (a) Total number of papers published in BE in the four years before and after the implementation of a double-blind review policy in 2001. (b) Percentage change in author representation.

## More accurate descriptors?

“Women scientists are less likely to have their submitted manuscripts successfully navigate the peer review process required to have their scientific work published”

**The review process and the journal are the agents of action in this sentence**

# Women are not people

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- Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Arch Intern Med, 1997
  - “No more than 1 drink per day in women and lighter-weight persons.”

Letter to the editor with apology and promise to be more careful in JNC7.
- Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. JAMA, 2006
  - “No more than 1 drink per day in women and lighter-weight persons.”

Letter to the editor not accepted for publication.

# Women's continued invisibility in clinical research

- [Wooley and Simon, NEJM 343:1942-1950 2000](#) – review on managing depression in medical outpatients

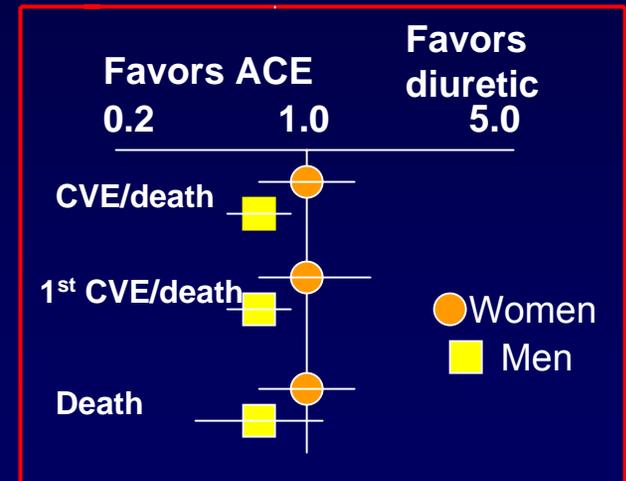
No mention of:

- greater prevalence in women;
- postpartum depression;
- safety of antidepressants during pregnancy or nursing;
- how to counsel women on rx who want to get pregnant;
- childhood sexual abuse, domestic violence, or sex and gender-based harassment in the work place as risk factors

- [Wing et al NEJM 348:583-92 2003](#) –  
ACE vs diuretic for HT in elderly outpatients

- results in older women ignored;
- results extrapolated to “the elderly”

- [McFalls et al NEJM 351:2795-804 2004](#) –  
RCT CABG before elective vascular surgery
- 98% men
- results extrapolated to “patients”



# Inadequate compliance with NIH guidelines to include women in clinical trials

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- NIH Revitalization Act of 1993 – NIH required to include women; other fed agencies followed
- 9 high impact medical journals in 2004
- 46 studies, not sex-specific
  - 70% enrolled  $\geq$  30% women
  - 40 (87%) did not report outcomes by sex or include sex as a covariate in modeling
  - None acknowledged limits of generalizability (including 7 studies with  $<$ 20% women)

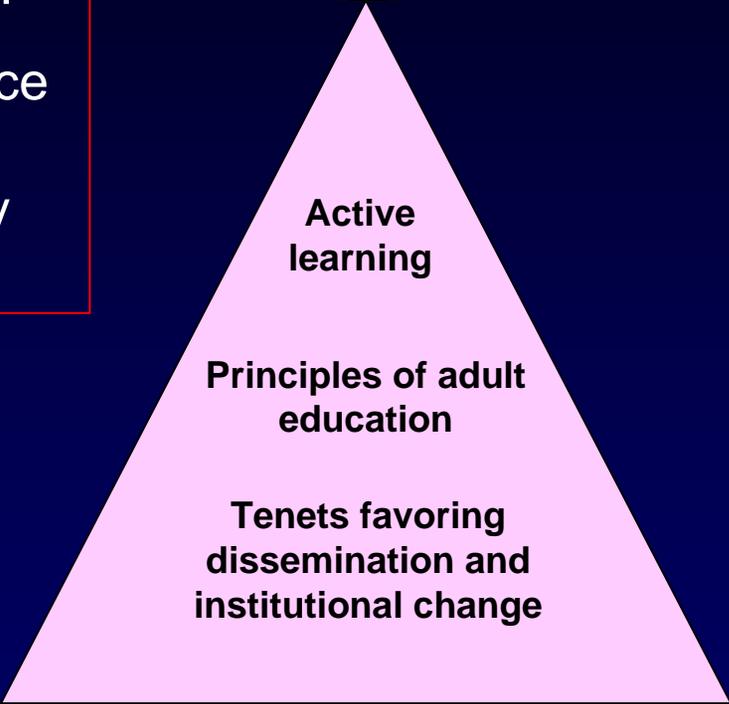
# Recommendations

- Acknowledge that we all have biases and assumptions and make evaluators familiar with relevant social science research
- Examine language at gatekeeping junctures for evidence of semantic priming
- Describe behaviors (*desired* as in a job ad or *actual* as in performance review) in specific, concrete terms to avoid transmitting gender stereotypes
- Continue to raise awareness of the fact that:
  - “fixing the women” is not enough to achieve gender equity
  - it is not good science to exclude women or to fail to note the limits of generalizability and it is potentially harmful to women’s health



**UW-Madison WISELI:  
Searching for Excellence  
and Diversity –  
Workshops for faculty  
search committees**

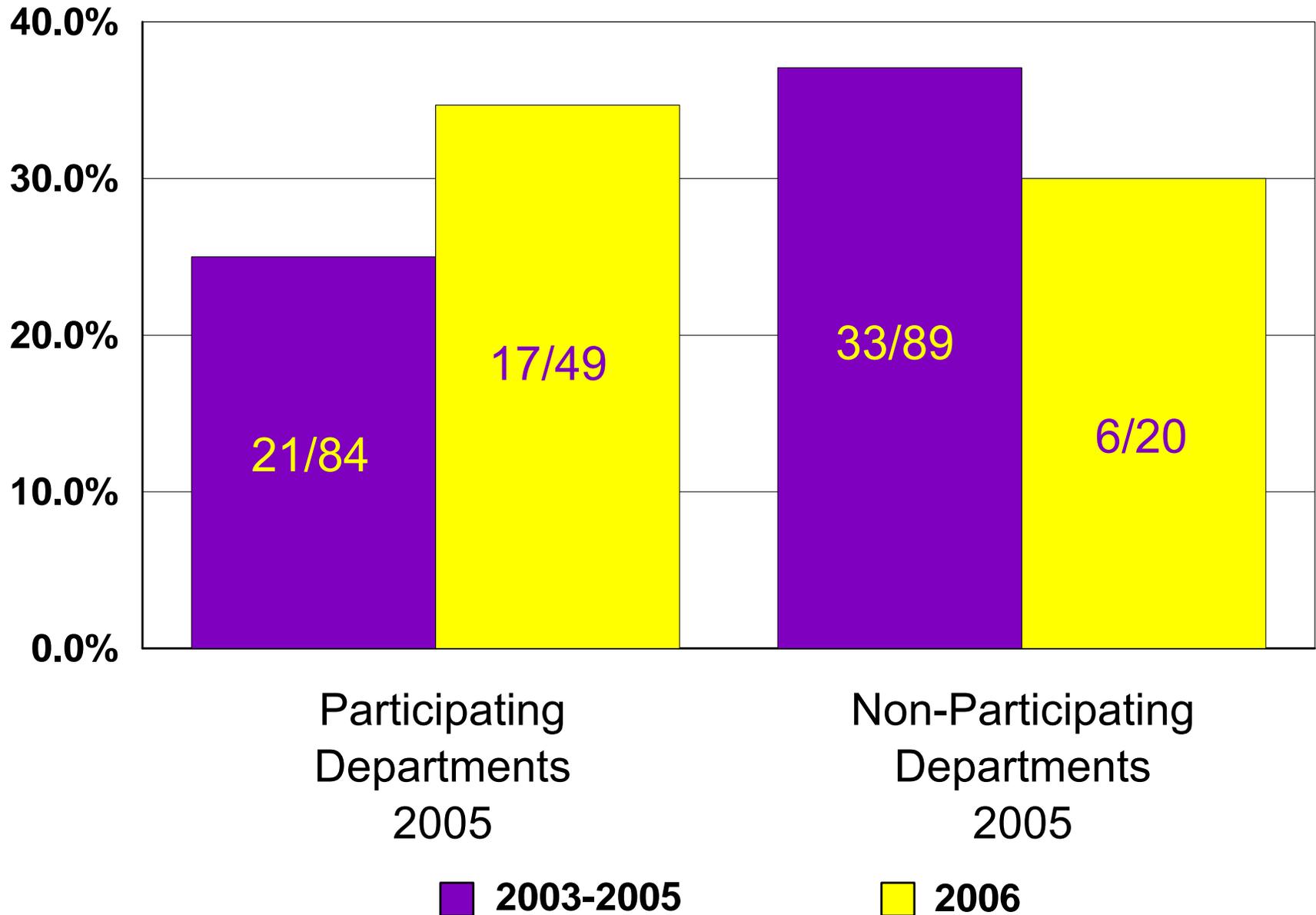
**Teach faculty  
how to run  
effective  
searches**



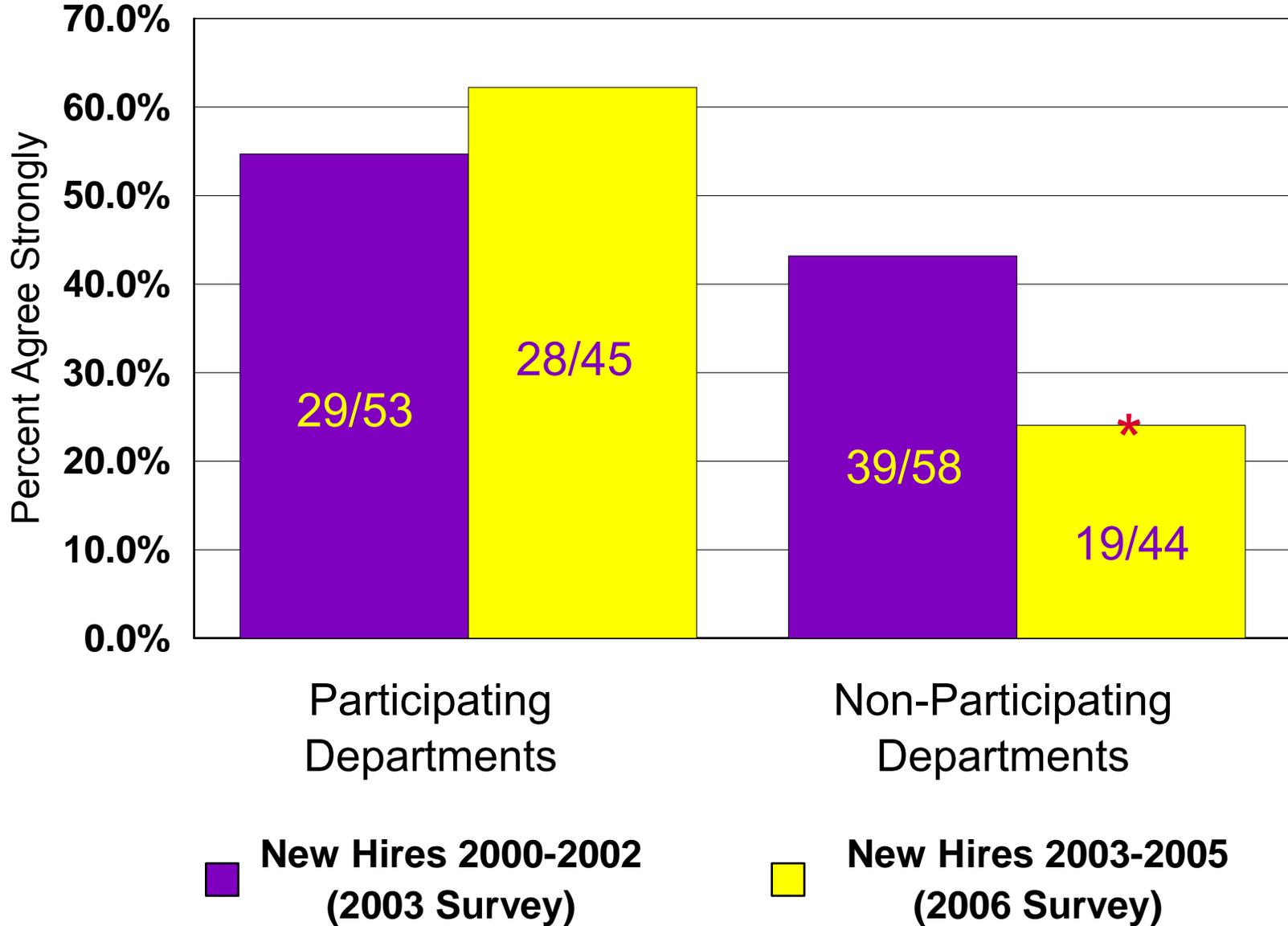
**Introduce research  
on biases and  
assumptions**

**Present  
evidence-  
based  
strategies**

# Percent Female, New Tenure-Track Faculty Biological & Physical Sciences



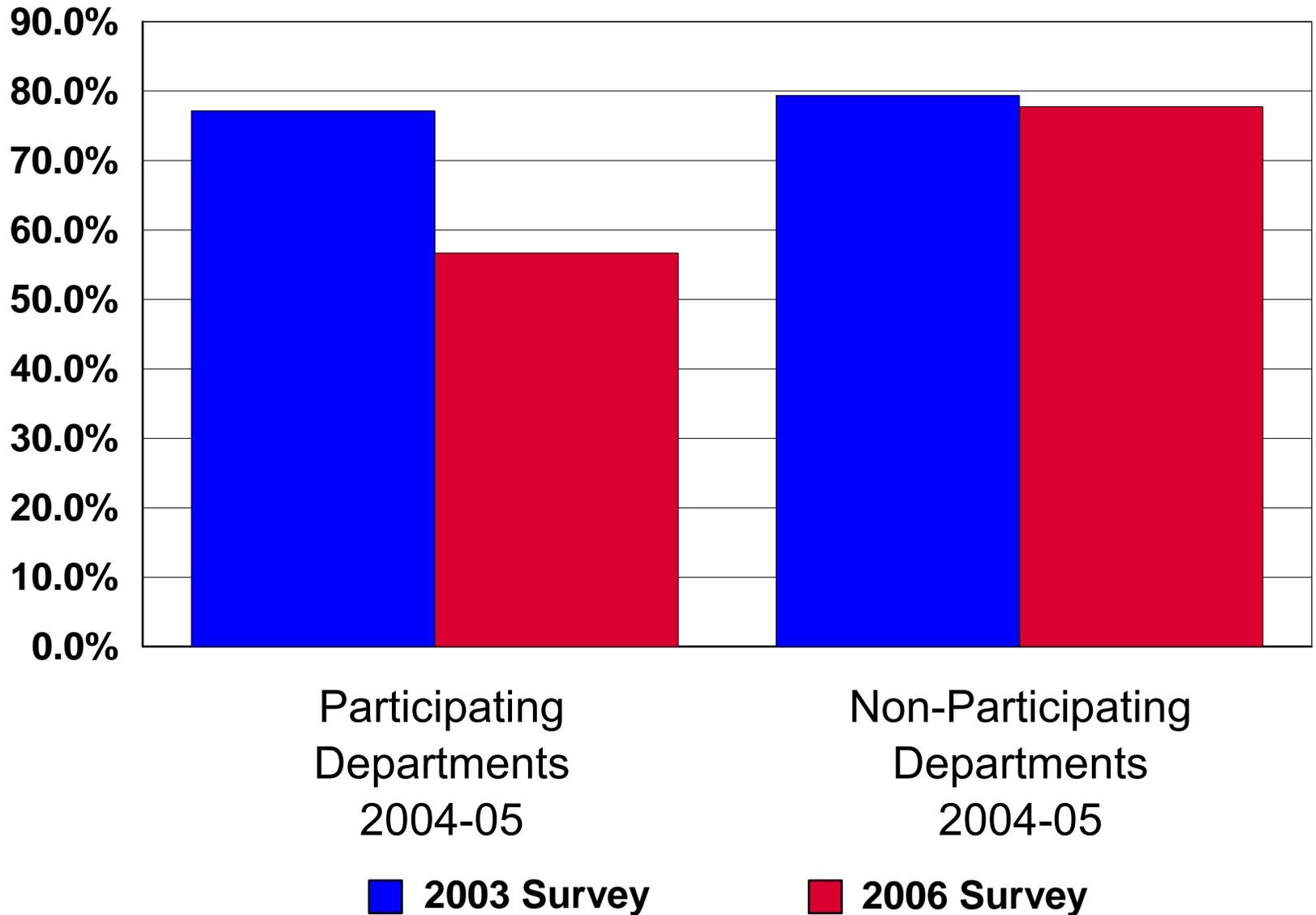
# New Hires' Satisfaction\* With the Hiring Process Biological & Physical Sciences

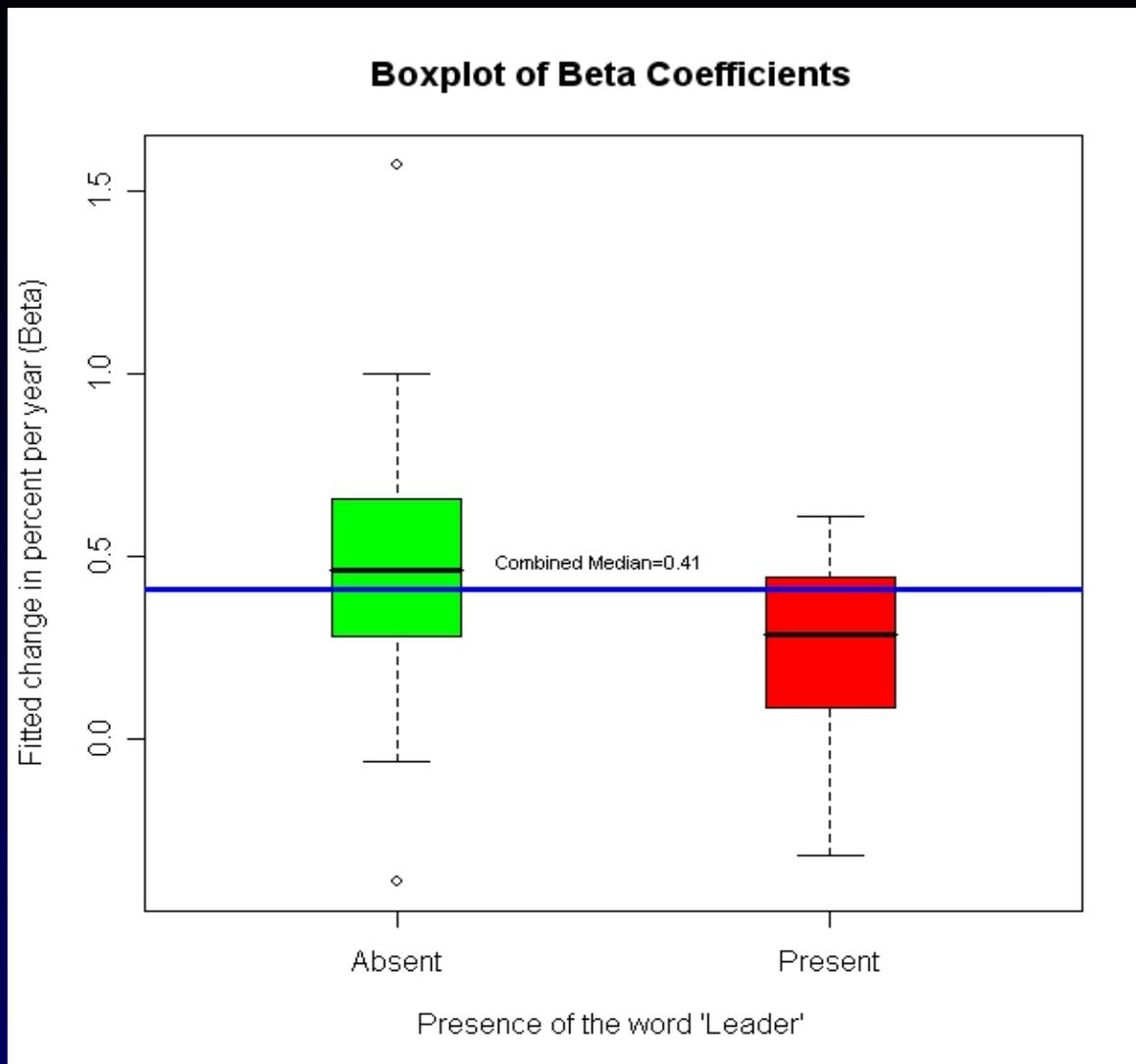


\* Agree Strongly to the item "I was satisfied with the hiring process overall."

# The Climate for Faculty of Color is Good

## Biological & Physical Sciences





**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 ( $p = 0.04$ ).**

# What is “unconscious bias”?

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- Unconscious bias and assumptions
- Previously held beliefs about a social category
- Schemas
- Stereotypes
- Mental models
- Cognitive shortcuts
- Statistical discrimination
- Implicit associations
- Spontaneous trait inference

The tendency of our minds to judge *individuals* based on characteristics (real or imagined) of *groups*



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

# Stereotypically male traits valued for tenure

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## Male

- Analytical
  - Competitive
  - Defends
  - Independent
  - Individualistic
  - Leadership
  - Risk
- 

## Neutral

Friendly  
Helpful  
Inefficient  
Truthful

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4 schools

Total 5

## Female

Sensitive  
Understanding  
Yielding

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3 schools

Total 3

Med 5.5/school; 2-50

Total 183