University of Wisconsin – Madison ADVANCE Program:
Did we transform the institution in 5 years?

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Institutional Transformation:

- Alters the culture of the institution by changing select underlying assumptions and institutional behaviors, processes, and products
- Is deep and pervasive, affecting the whole institution
- Is intentional
- Occurs over time

Eckel, Hill, & Green, 1998;
American Council on Education

Stages of change for smoking cessation

Stage	Smoker	IT - Individual	IT - Institution
Pre-contemplation	“Smoking is not a problem and I enjoy it!”	“We’ve always done it this way, and it seems to work just fine.”	No resources committed to solutions
Contemplation	“I am worried that smoking is bad for my health and I want to quit.”	“If we want to keep the best and brightest, we must figure out a way to keep the women from leaving.”	Task force charged with reviewing local data
Preparation	“I am going to buy a nicotine patch and quit on my birthday.”	“I am reading Why So Slow? By Valian	A strategic plan for diversity is developed
Action	“I quit!”	“I called the program chair and complained that there were no women speakers”	Women chair hired
Maintenance	“I enjoy being able to breathe more than smoking.”	“I am proud of the advances our school has made hiring and promoting women.”	Institutional data is monitored and made public

Carnes et al., 2005

5 assumptions about adult learning
Malcolm Knowles, 1984

- Adults are independent and self directing
- They have accumulated a great deal of experience, which is a rich resource for learning
- They value learning that integrates with the demands of their everyday life
- They are more interested in immediate, problem centered approaches than in subject centered ones
- They are more motivated to learn by internal drives than by external ones

UW-Madison's NSF ADVANCE Institutional Transformation Award

General strategy = hit the issues from all angles and imbed them in every discussion

- Develop a visible presence on campus to coordinate all initiatives: Women in Science & Engineering Leadership Institute (WISELI)
- Mount new initiatives that fill gaps in UW-Madison's environment
- Evaluate impact of both old and new initiatives
- Perform research to understand issues for women faculty
- Disseminate current best-practices

Six Schools/Colleges Targeted: Biological and Physical Sciences

- College of Agricultural and Life Sciences
- College of Engineering
- College of Letters and Science
- Medical School (now the School of Medicine and Public Health)
- School of Pharmacy
- School of Veterinary Medicine

Whenever possible…

- Broaden interventions to reach the entire campus:
  - E.g. collaborate with Provost's office on WISELI faculty worklife survey
- Expand diversity to include ethnic and racial minority issues
  - E.g. include research on unconscious gender and racial/ethnic group biases
- Leverage additional resources
  - E.g. endowment for Life Cycle Research Grants, apply for NSF programs with aligned missions (e.g. LSAMP, AGEP)
- Apply what we learn beyond UW-Madison
  - E.g. Examination of scientific review processes that would enhance application of gender bias

Academic core values at the root of WISELI initiatives

- WISELI established as a *Research* Center led by *faculty*
- Strategies draw from:
  - Conceptual frameworks for transferring research into practice
  - Principles of adult education
  - Clinical research on intentional behavioral change (e.g. stages of change for smoking cessation)
- Controlled, experimental studies from social and cognitive psychology presented
- Data from WISELI initiatives
  - UW-Madison = Living Laboratory
  - Fed back to faculty

- WISELI leaders presenting and publishing results in peer-reviewed venues further enhance credibility

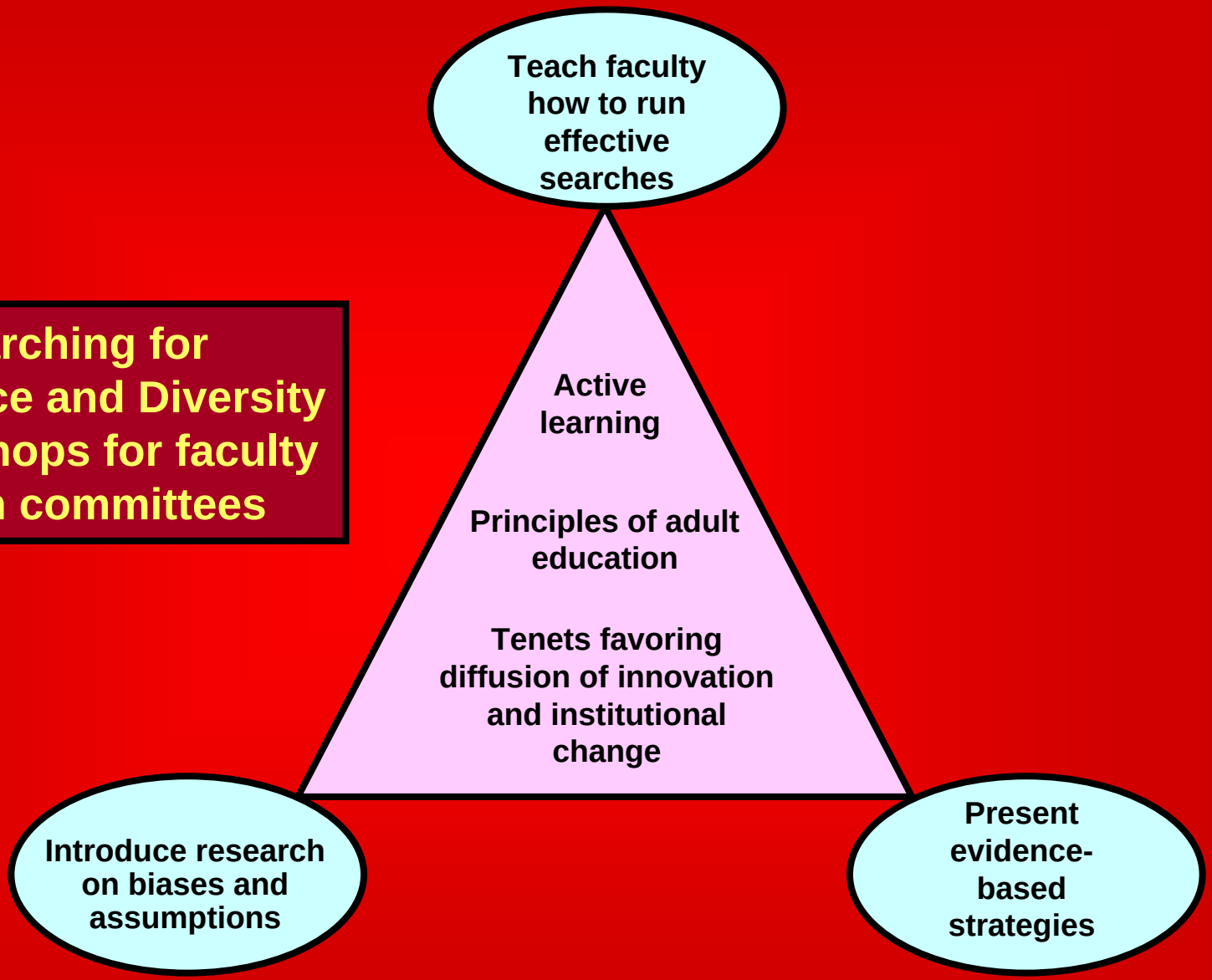
Major WISELI Research Projects

- Study of Faculty Worklife at UW-Madison
  - All-faculty surveys in 2003 and 2006
- Ethnographic study of gender in a laboratory setting
- Discourse analysis of gendered interactions in meetings
- Exit interviews with women STEM faculty who left UW-Madison
- Analysis of pools and recipients of major campus awards

Major WISELI Programs

- *Searching for Excellence & Diversity*
  - Workshops for chairs of hiring committees at UW-Madison
  - *Implementing Training for Search Committees* workshop for other campuses
- *Enhancing Department Climate: A Chair's Role*
- *Vilas Life Cycle Professorship Program*
- *Celebrating Women in Science & Engineering Grant Program*

Searching for Excellence and Diversity – Workshops for faculty search committees



Five elements of a successful search

1. Run an effective and efficient search committee
2. Actively recruit an excellent and diverse pool of candidates
3. Raise awareness of unconscious assumptions and their influence on evaluation of candidates
4. Ensure a fair and through review of candidates
5. Develop and implement an effective interview process

What is “unconscious bias”

- 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*

Background on Gender

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 = generally less valued in society (i.e. paid for)
- Men: Decisive, inventive, strong, forceful, independent, "willing to take risks" = generally more valued

RELEVANT POINTS:

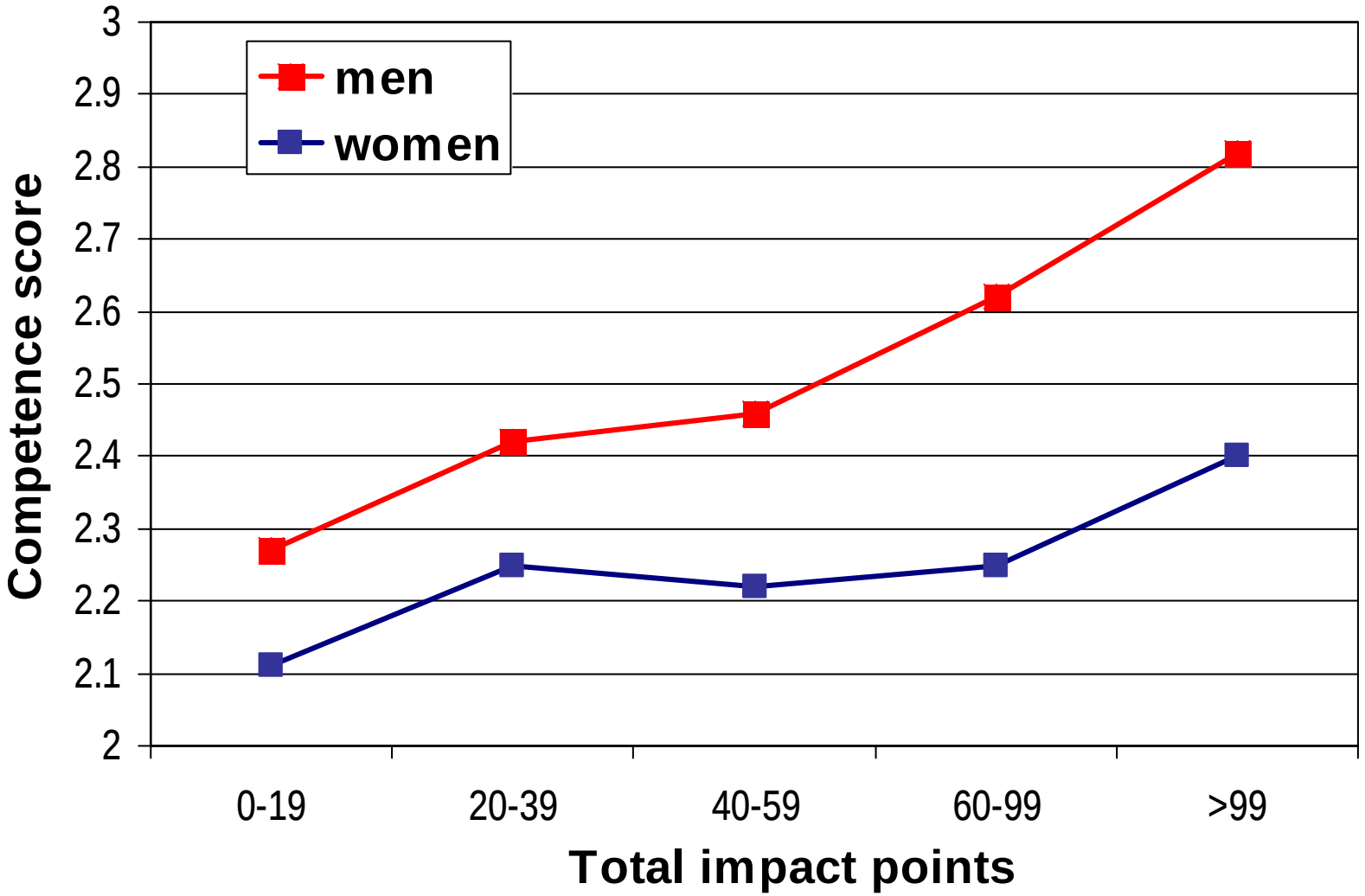
- Leaders, physicians, scientists, professors: Decisive, inventive, strong, independent
- Social penalties for violating prescriptive gender assumptions
- Unconscious gender stereotypes are easily and automatically activated and once activated readily applied

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

Wennerås & Wold, *Nature*, 1997

- 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

Wennerås & Wold, *Nature*, 1997



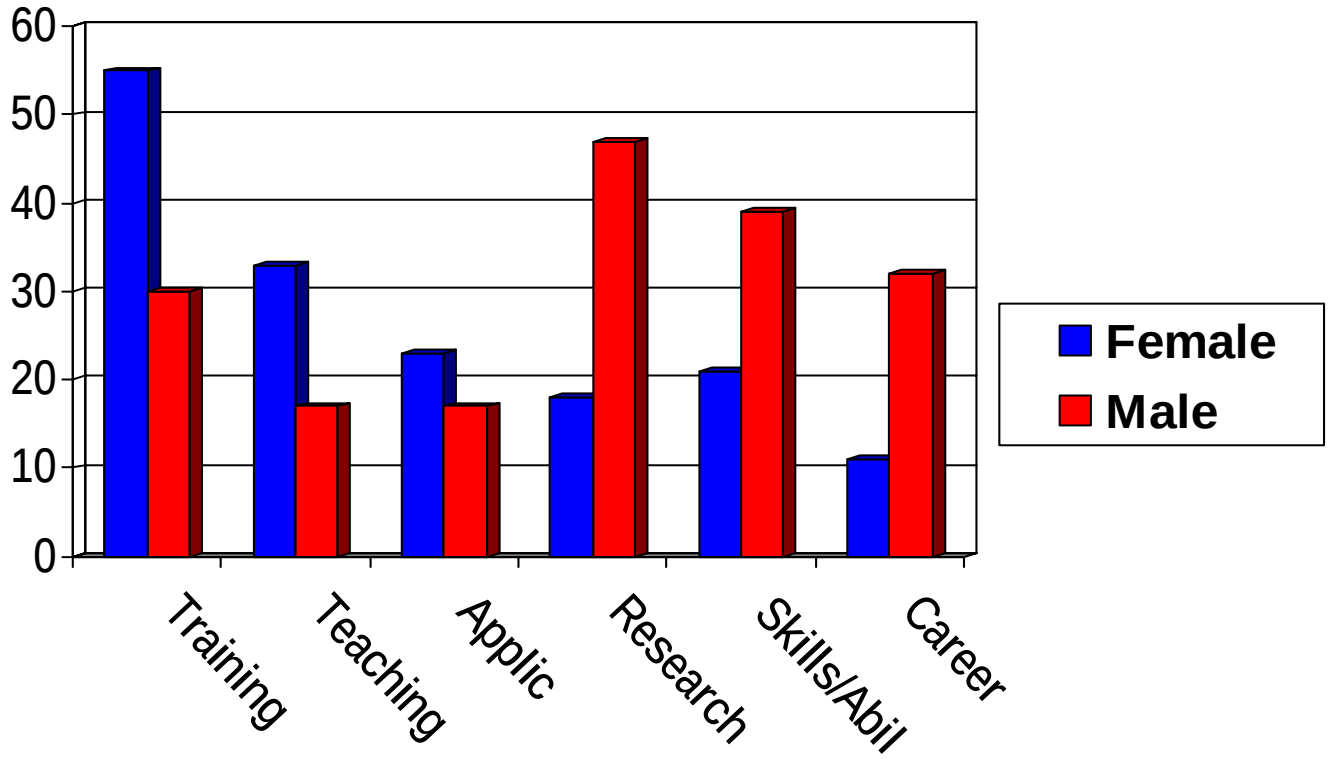
Steinpres et al., *Sex Roles*, 1999

- 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

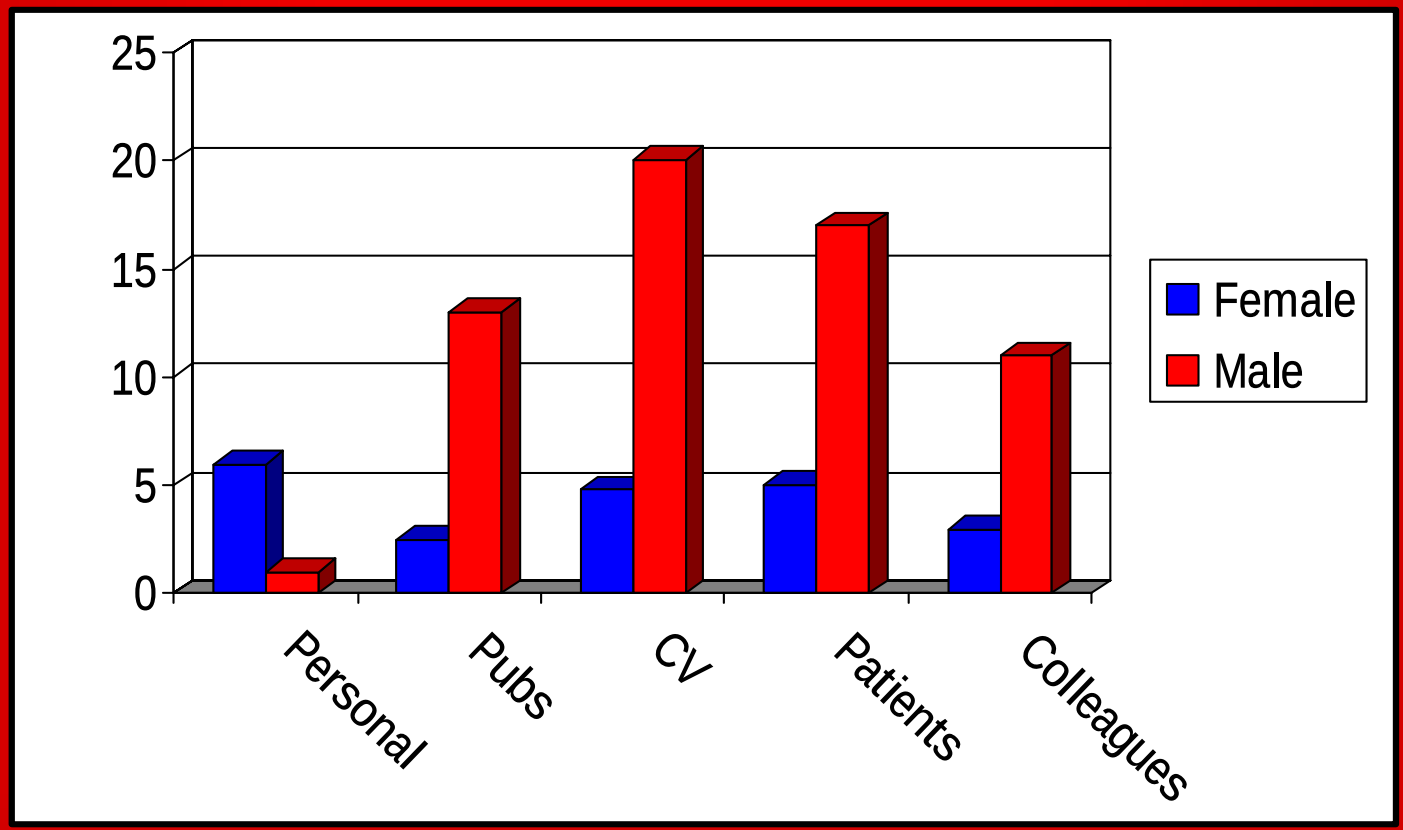
Trix and Psenka, *Discourse & Society*, 2003

- 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”
  - 34% vs 23% *grindstone adjectives*
  - Fewer *standout adjectives* (“outstanding” “excellent”)

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



Distinctive semantic realms following possessive



Consistent story in field and experimental studies over several decades –

- 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 gender-biases (conscious or unconscious) and they would be predicted to disadvantage women in evaluation for a position traditionally held by a man

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

- 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)
- Use of abstract rather than concrete language to describe attributes (e.g. “he broke a test tube” “she is clumsy in the lab”)
- Semantic priming with gender-linked words

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

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% women 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
Using an inclusion rather than an exclusion strategy to select a final list	Hugenberg et al. J Pers Soc Psychol 91:1021-312006
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

Applying what we learn beyond UW-Madison

- Dissemination & consultation
  - Train the trainer workshops
  - Lectures
  - Sharing materials and experience
- Research:
  - Semantic priming in NIH Director's Pioneer Award
  - Wording of tenure criteria

NIH Director's Pioneer Award

- First NIH Roadmap initiative to be rolled out
- Intended to accelerate innovative research unsupported through traditional NIH funding mechanisms
- $500,000/yr for 5 years
- None of 9 awarded first round were women
- Women: 6/14 second round (43%); 4/13 third round (31%); 4/12 fourth round (25%)

Carnes, et al. JWH, 2005

2004	2005+
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"
Goals of research to be supported	
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."

“Leader” in tenure criteria

- 25 top research academic medical centers
- Tenure criteria from websites
- Scanned for “Leader”
- Also scanned for other Bem Sex Role Inventory male, female, neutral words
- Slopes of regressions for annual % faculty who are tenured women x 7 years
- “Leader” = OR 6.0 (1.02, 35.37; p=0.04) for slope below median compared to those without

Marchant et al. 2007

Words describing stereotypically male traits predominate in tenure criteria

Male

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

Med 5.5/school; 2-50

Total 183

Neutral

Friendly
Helpful
Inefficient
Truthful

4 schools

Total 5

Female

Sensitive
Understanding
Yielding

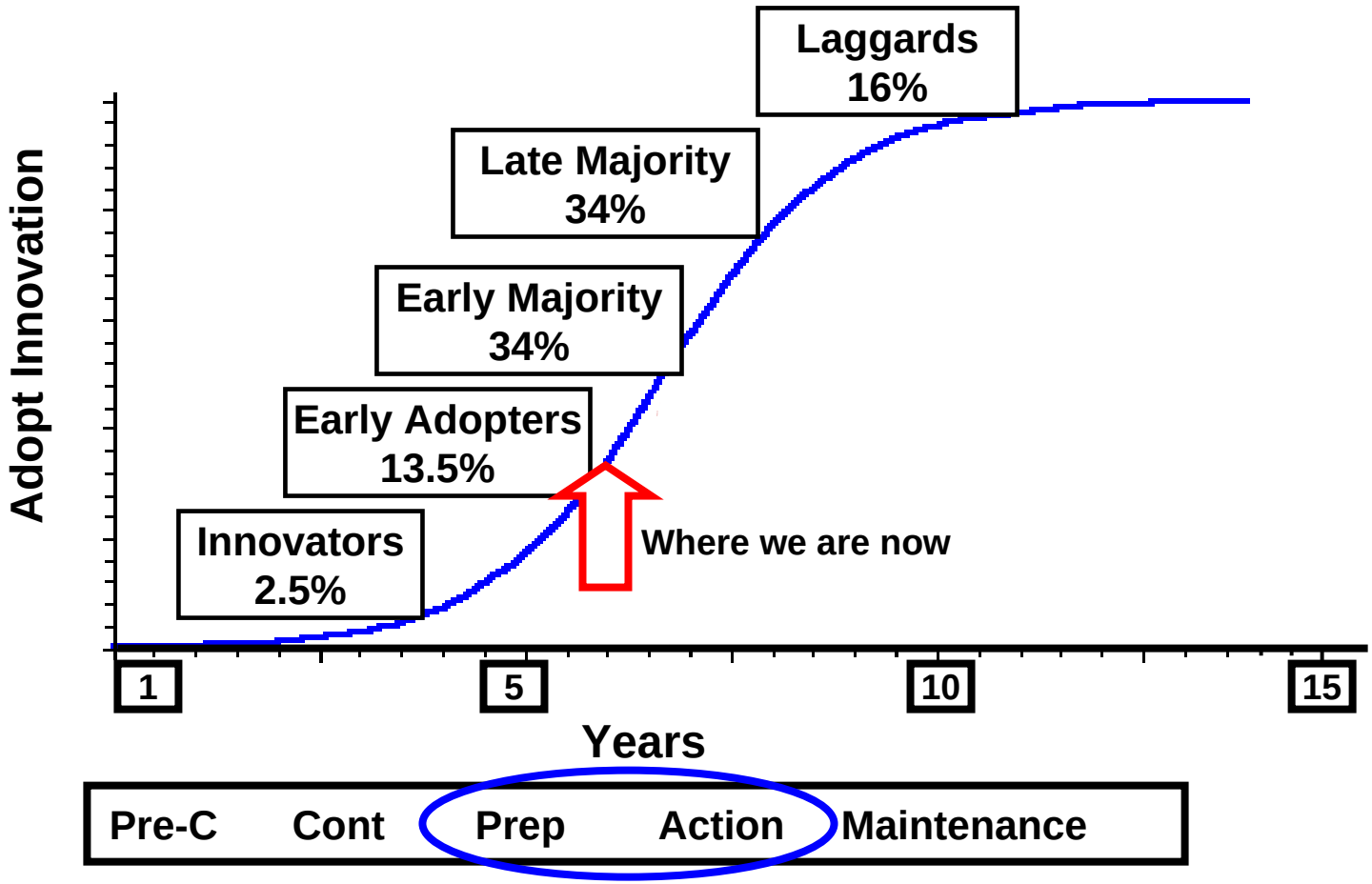
3 schools

Total 3

Diffusion of Innovation

Most innovations have an S-shaped rate of adoption

Gabriel Tarde, 1903; Ryan and Gross, 1940's; E.M Rogers, 1995



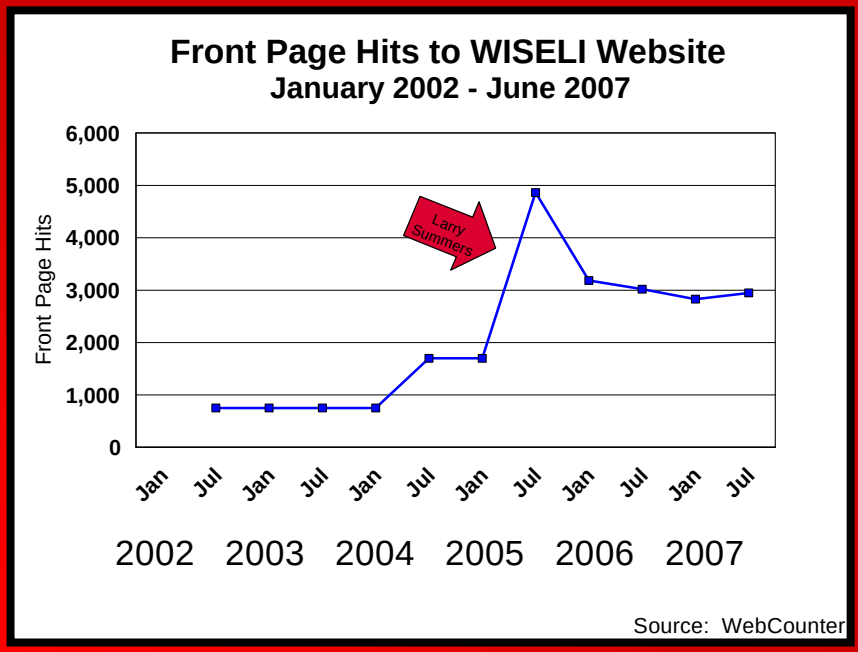
Diffusion of Innovations
E.M. Rogers, 1995

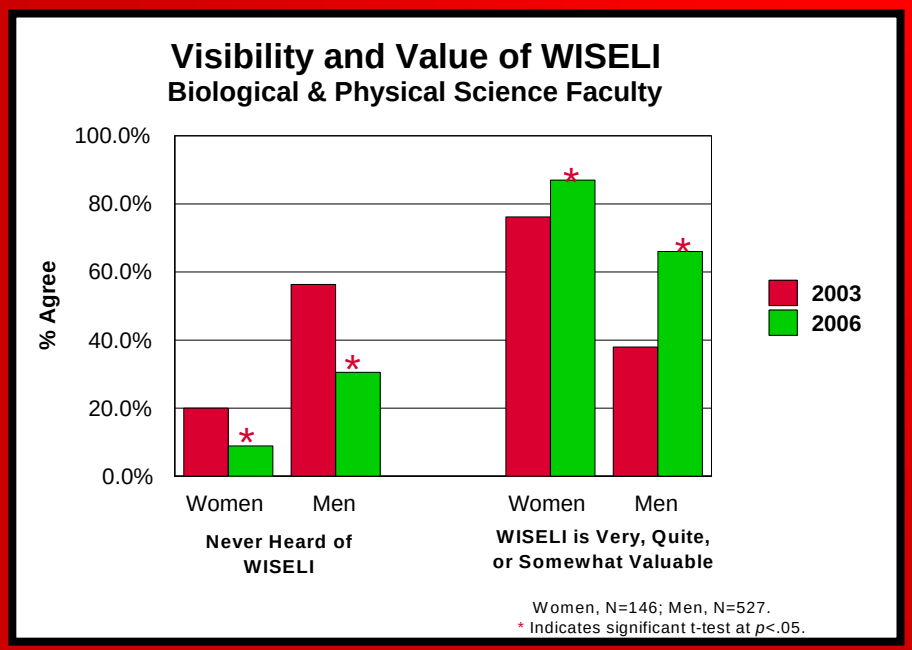
Four main elements of innovation diffusion	
Innovation	Changing knowledge, skills, attitudes, and behaviors of evaluators at gatekeeping junctures in an academic career re: biases and assumptions
Communication channels	Workshops, brochures, presentations
Social system	Academic science and engineering
Time	Surgeon General's first report on smoking: 1964 No smoking in bars in Madison, WI: 2006

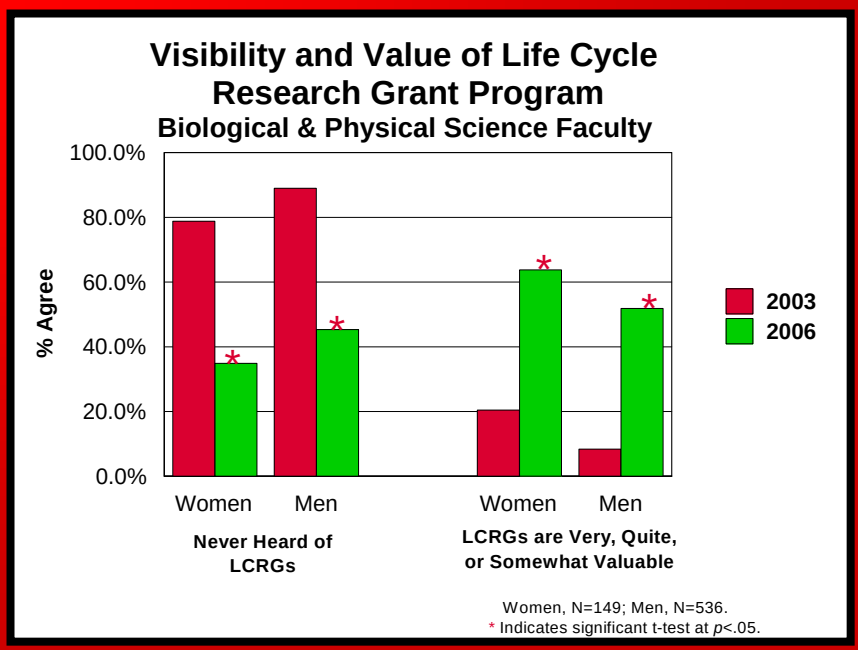
Using knowledge to solve human problems (regardless of name) - Backer, 1993

- Making organizations *aware* of the innovation
- Providing *evidence* of effectiveness and feasibility
- *Resources* must be adequate
- Provide *interventions* that encourage individuals and organizations to change

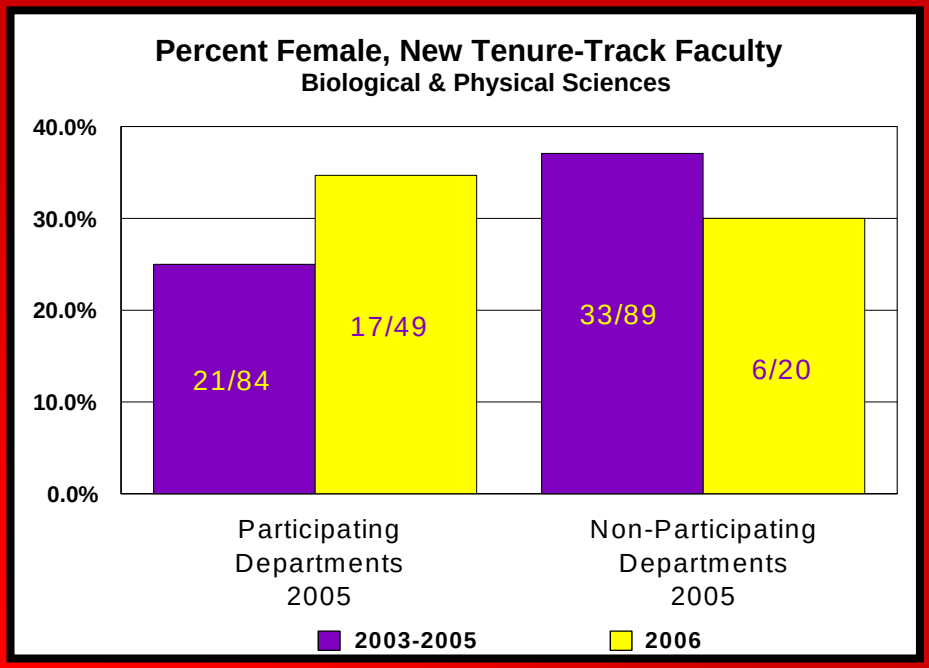
Indicators supporting awareness of WISELI's efforts and perceived value

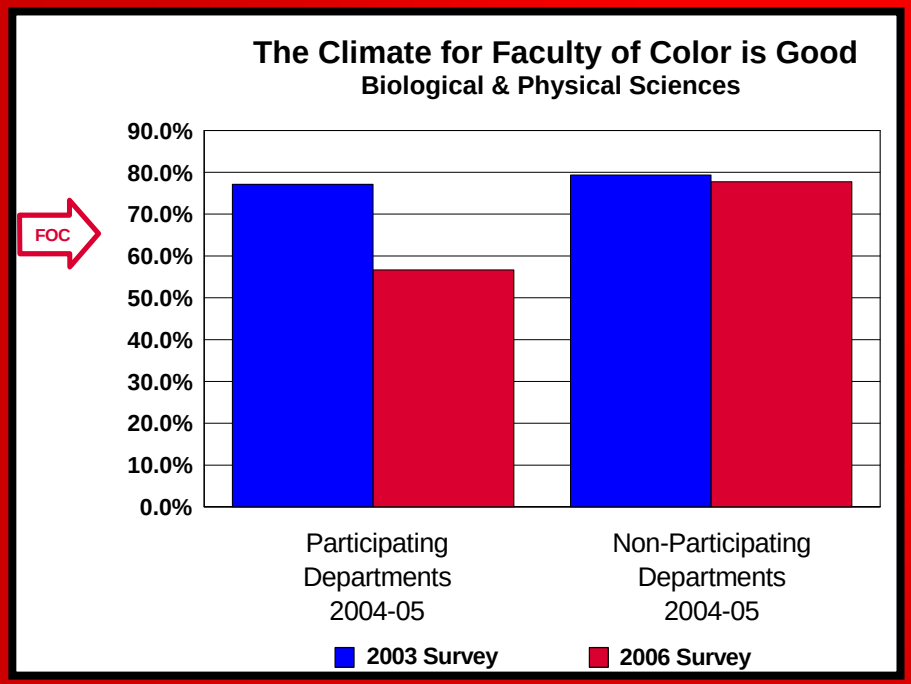


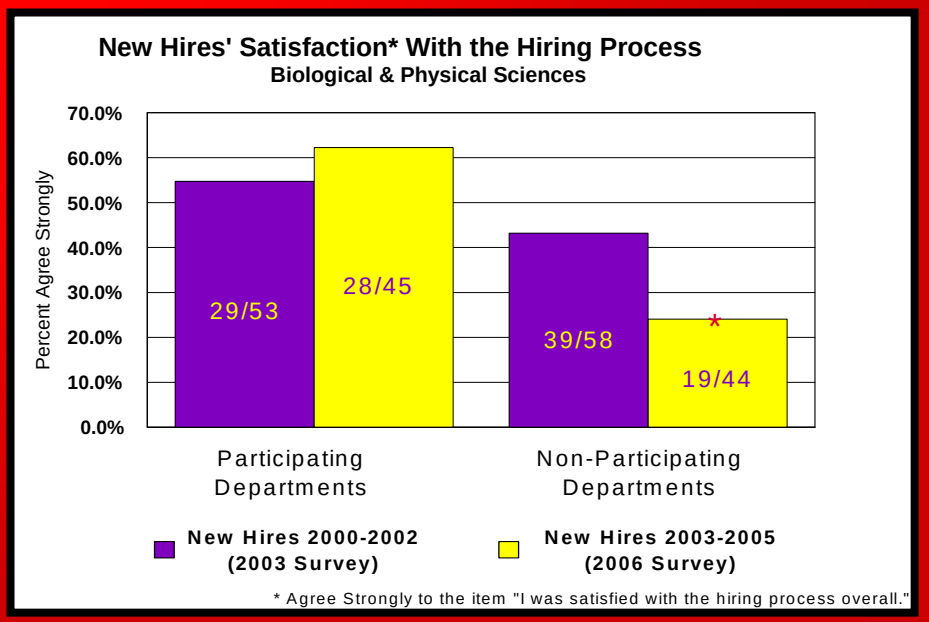




Evidence for influence on attitudes and behaviors



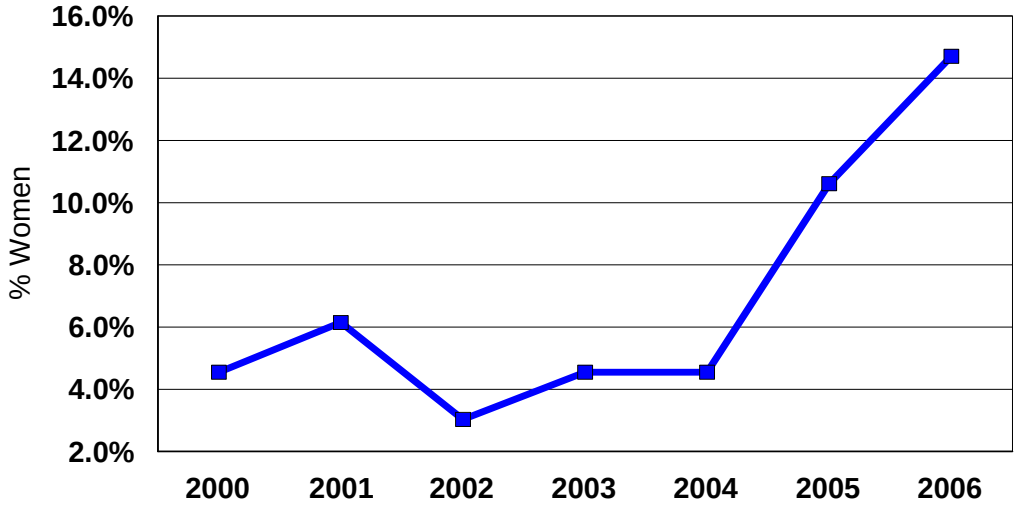




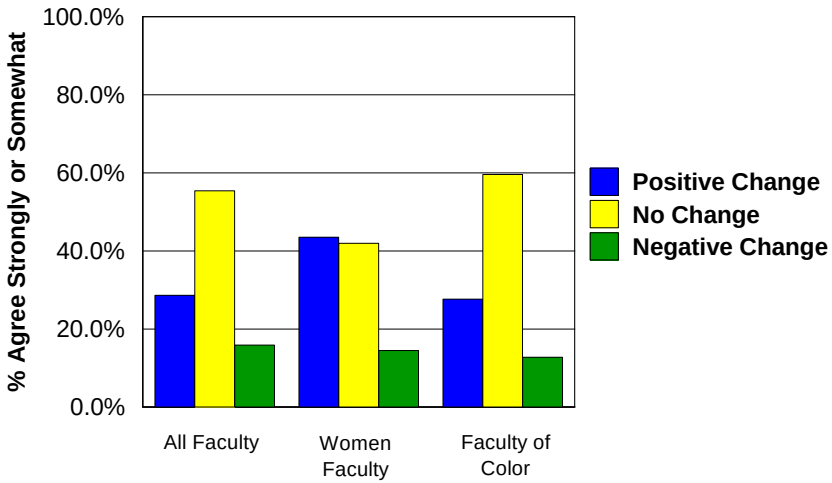
Selected indicators of the success of ADVANCE at UW-Madison

Percent Women Department Chairs

Physical & Biological Science Faculty Only

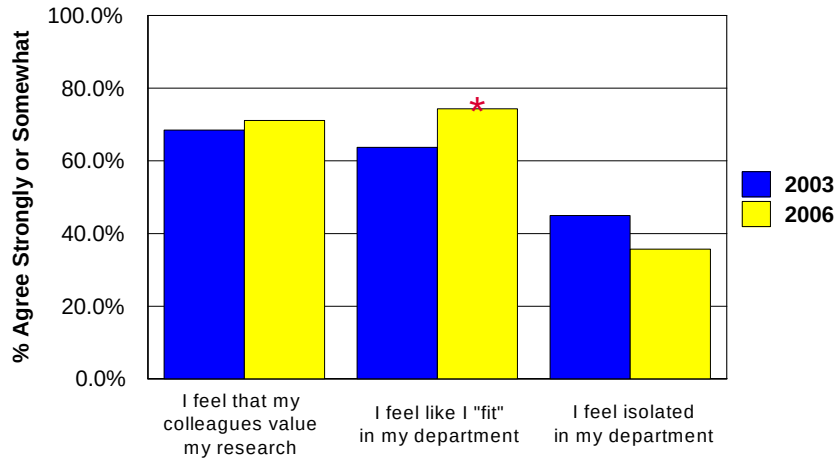


Climate Change in Department For Me Personally



Biological and physical science faculty only, N=572.

Climate Change in Department
Selected Indicators/Women Faculty



Biological and physical science faculty only, N=150.
* Indicates significant t-test at $p<.05$.

Future goals

- Move WISELI model up a level to include 3 main diversity areas
- Move administratively beyond the College of Engineering (proposed move to Graduate School)
- Become self-sustaining
- Re-do all faculty worklife survey every 5 years

Wisconsin **I**nstitute for
Research and **E**valuation on
Diversity in **S**cience, **T**echnology, **E**ngineering, and **M**athematics

WIRED in STEM

Shared core services, conferences, help with recruitment,
keep relevant data from UW Faculty Worklife Survey, program evaluation, etc.

Women and Gender

Ethnic and Racial

Disability

Summary:
signs and symptoms consistent with a transforming institution

- WISELI has launched several innovations that are becoming part of established practices at UW-Madison
- Evidence suggests that overall the climate for women is improving
- Participation in WISELI hiring workshops may increase the number of women hired and change the perception of climate for faculty of color
- The efforts supported by the NSF ADVANCE program have enabled us to examine and critique practices beyond UW-Madison that would be predicted to disadvantage women scientists

4-stage model of institutional and personal readiness for transferring research into practice – Simpson, 2002

- Exposure
- Adoption
- Implementation
- Practice

Incorporates theoretical and industrial research findings from the field of organizational behavior

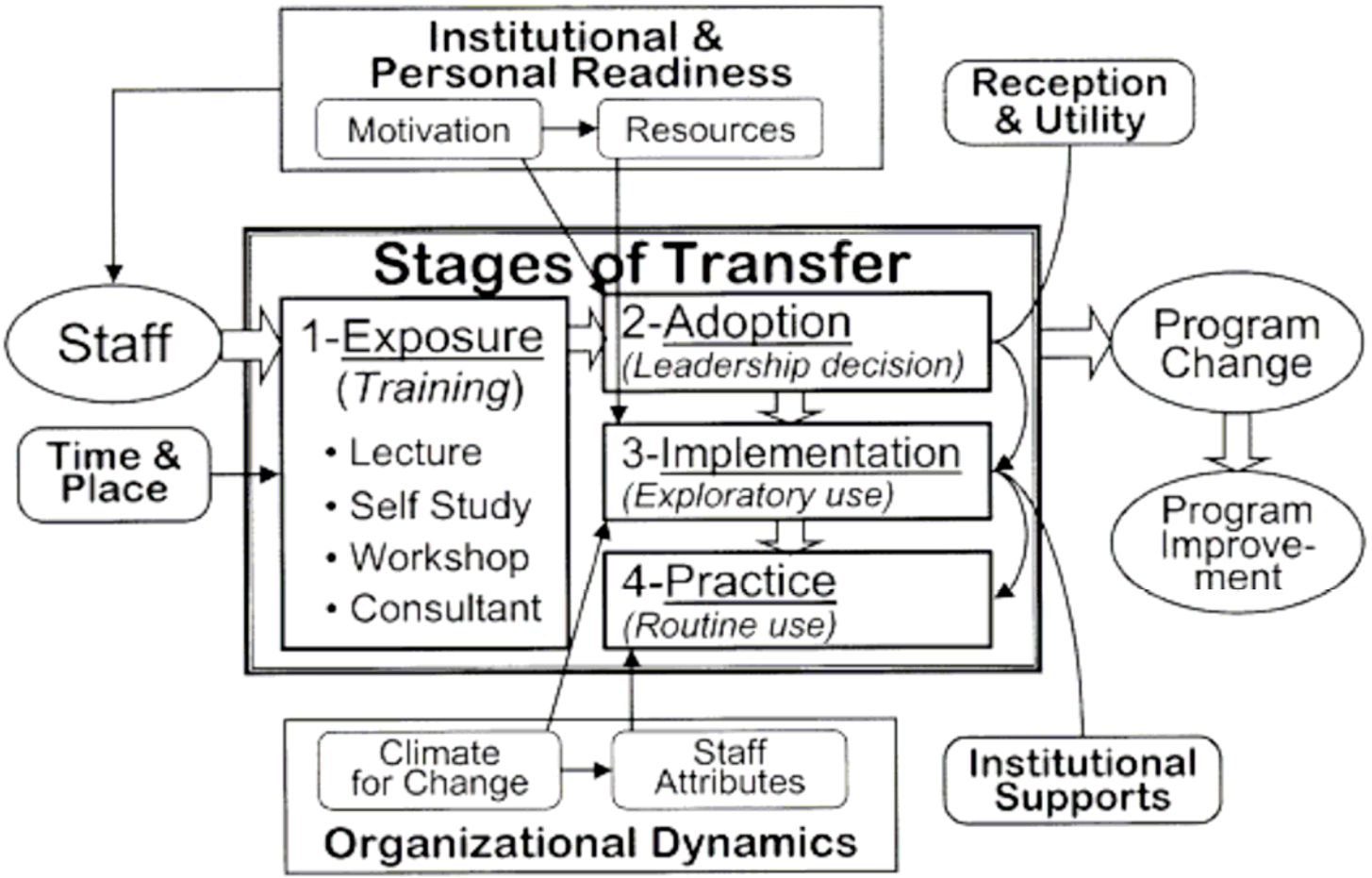


Fig. 1. Program change model for transferring research to practice.

Leveraging resources

- WISELI Life Cycle Research Grants

  ⇨ Vilas Life Cycle Research Grants
- Executive Director position from campus funds
- Funds from individual schools and colleges
- Space and staff from College of Engineering
- Additional grants run through WISELI
- Establishing income-generating account for some activities