

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

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Topics about WISELI

- Background
 - Issues of women in science in US
 - NSF ADVANCE program
- WISELI
 - Administrative structure
 - Proposed initiatives
 - Research and evaluation
- Why Plant Pathology?

NSF Report on Women, Minorities, and Persons With Disabilities in Science and Engineering, 2000 (NSF 00-327)

- This is not about political correctness
- There are critical shortages in the scientific workforce in this country
- This is about continued scientific pre-eminence of the U.S.
- The workforce issues could be largely solved if we could attract more women and under-represented minorities into science and engineering careers

Five reasons diversity is desirable

Survey of Fortune 100 HR executives

- Better utilization of talent
- Increased marketplace understanding
- Enhanced breadth of understanding in leadership positions
- Enhanced creativity
- Increased quality of team problem-solving

Robinson and Dechant, Acad of Manag Exec, 1997

NSF findings

- Women in science and engineering more likely to be part time or unemployed
- Women less likely to be tenured or professors; declining numbers in math and CS
- Women in science and engineering likely to have lower salaries than men (more than other fields)

October 2000 UW Madison Faculty by Division, Rank, Gender

Division	Professor			Associate Professor			Assistant Professor			Total Faculty		
	Men	Women	Women	Men	Women	Women	Men	Women	Women	Men	Women	Women
Total	1127	233	17.1	266	125	32.0	262	161	38.1	1655	519	23.9
Humanities	162	80	33.1	36	36	50.0	43	37	46.3	241	153	38.8
Biological Sciences	366	55	13.1	116	33	22.1	69	48	41.0	551	136	19.8
Physical Sciences	334	17	4.8	58	11	15.9	67	15	18.3	459	43	8.6
Social Studies	265	81	23.4	56	45	44.6	77	59	43.4	398	185	31.7
No affiliation	---	---	---	---	---	---	6	2	25.0	6	2	25.0

Previous assumptions have proven false:

Assumption

- There aren't enough qualified women in the applicant pool
- Women don't want to go into academic science and engineering b/c they want more time with their families
- Women don't have the drive to do research
- Earmarking money for women scientists will solve the problem

Reality

- In S&E 40% grad students ('97); 33% PhD's ('96); 20% of BS's do graduate study
- More control in academia than other jobs
- Better grades, more honors at early steps
- Failure of POWRE program to make a dent; gender equity programs little impact on science and engineering

Why has achieving equity been so slow in many fields of science and engineering?

- “Triple penalty of cultural, attitudinal, and structural impediments” (Vetter, 1992)
- Mathematical model of aggregate effect of minor negative “kicks” along the career path prevent women scientists from achieving their full potential. (Cole and Singer, 1991)
- Gender-based (48%) or sexual (37%) harassment of women MDs. (Frank et al., 1998)
- Gender schema: a core of unconscious beliefs each of us holds about the behaviors, traits, and preferences of men and women. (Valian, 1999)

Gender Schema

- Gendered differences that cause women to get lower evaluations:
 - Patterns of speech
 - Use of language
 - Eye contact
 - Physical size
 - Social roles outside the workplace
 - Comfort with competitive behavior
 - Willingness to be the center of attention
 - Feelings of entitlement
 - Tendency to internalize failures and externalize successes
 - Feelings of guilt related to performance as a parent

No quick fix

Academic science exists in broader culture -
multilayered approach required

- Institutional policies and practices that disadvantage women
- Personal and professional knowledge and skills necessary for academic success
- Absence of women in the pipeline at each level
- Gender climate

Gender Climate

- The hardest nut to crack
- The ton of feathers
- Difficult to define, but universally felt

UW Gender Climate Survey: 836 Med Sch faculty; 61% response

“Are you aware of informal networking which systematically (even if not purposely) excludes faculty members on the basis of gender?”

Yes: 24% women; 6% men; $p < .001$

UW Gender Climate Survey

Gender differences in responses ($p < .001$)

- I feel like a welcome member of the academic community
- I feel my advice is sought
- My career is not taken seriously
- I have observed situations in which women are denigrated based on their gender
- Perceived obstacles to academic success – women 2-3X rate of men

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NSF ADVANCE Program

- Goal: to increase representation of women in leadership in science and engineering
- Funding: \$3.75 million over 5 years
- Nine universities funded
- Both separate and collaborative initiatives among campuses
- Evaluation and assessment significant component

Why a focus on women's leadership in academic science and engineering?

- Academic leaders set the nation's research agenda and inform public policy
- Academic trajectory can lead to chair and dean with power to make major change (e.g. Denice Denton!)
- Academic leaders become “peer” reviewers
- Women in academic science and engineering can be role models and foster careers of other women
- Academic centers can bring research methods to bear on this issue

2000 Headcount of UW-Madison Department Chairs by Gender and School/College

School/College	Men	Women	Percent Women
Agricultural and Life Sciences	19	1	5.0%
Division of Continuing Studies	2	0	0.0%
Education	6	3	33.3%
Engineering	9	0	0.0%
Letters & Science	33	11	25.0%
Medical School	22	2	8.3%
Veterinary Medicine	5	0	0.0%
Total	96	17	15.0%

6.5% of science and engineering departments

UW-Madison proposal

Administrative structure -- WISELI

- Co-PI's : Carnes, Handelsman
- Research Director: Jennifer Sheridan
- Leadership Team: Allen, Bier, Brennan, Durand, Ford, Middlecamp, Millar, Peercy, Sandefur, Sarto, Stambach, Wendt, Tong
- Evaluation Team: Ford, Stambach, Stevenson
- Administrative Partners: Provost, Deans Biol and Phys Sciences, Grad Sch, Assoc VC's, Chair Women's Studies
- Campus Affiliates: women and men across campus
- Administered through CoE

External Advisory Team

- Joan King
 - Pres. Women in Neuroscience
- Sally Kohlstedt
 - Prof, Hx of Science and Technology, UMN
- Charlotte Kuh
 - National Research Council
- Denice Denton
 - Dean, College Engineering, U Wash
- Sue Rosser
 - Dean, Ivan Allen College, Georgia Tech

Key Points about WISELI

- Use UW as ‘living laboratory’ to study the issues of women in science and engineering
- Develop initiatives and determine their impact
- Conclusions will be data driven
- Involve entire campus – men and women, sites of good climate and bad

Research questions

- What are the climate-related factors, barriers, attitudes, and experiences of women in science on this campus?
- To what extent do our interventions successfully address these factors?
- To what extent can our model be replicated and extended to other campuses?

Methods/Evaluation

- **Assessment of current status**
 - Town Hall mtgs with women in Biol and Phys
 - Patterns of institutional resource assignment
 - Survey of women and men faculty and staff in science and engineering (**PLEASE RESPOND!!!**)
 - Ethnographic study
 - Discourse analysis
- **“Issues Studies” on specific areas**
 - measure of “perceived climate” and examine predictor variables
- **Feedback on interventions and WISELI itself for mid-course corrections**
 - Surveys and interviews
- **Institutionalize processes for longitudinal monitoring**

WISELI Initiatives

- **Resources**
- **Workplace Interactions**
 - Climate Workshops for Chairs and Directors *
 - Workshops on Laboratory Management
 - Training of Search Committee Chairs *
- **Life-Career Interface**
 - Life Cycle Grants *
 - Time Stretcher Service
- **Development, Leadership, Visibility**
 - Senior Women Faculty Initiative *
 - Celebrating Women in Science & Engineering Grant Program *
 - Endowed Professorships for Women in Science
 - Conversion of certain academic staff into faculty positions
 - Leadership Development of Non-Tenure Line Women

Training of Search Committee Chairs

- Use “active learning” strategies
- Meet with chairs throughout search process
- Focus on inclusive committee process
- Share strategies for aggressive searching
- Introduce data about prejudices and assumptions – gender schema
- Brainstorm about dealing with issues during the search

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Research on Prejudices and Assumptions

- In every study we found, significant effect of gender or race of person evaluated
- **NO** significant effect of gender of person doing the evaluation

Research on Prejudices and Assumptions

- **When shown photographs of people who are the same height, evaluators overestimated the height of male subjects and underestimated the heights of female subjects.**
- **When shown photographs of men with similar athletic ability, evaluators rated the athletic ability of African American men higher than that of white men.**
- **When asked to rate the quality of verbal skills indicated by a short text, evaluators rated the skills as lower if they were told an African American wrote the text than if they were told a white person wrote it, and gave lower ratings when told a woman wrote it than when told a man wrote it.**

Research on Prejudices and Assumptions

- **Postdoc fellowships panel—**

Women needed substantially more publication power (the equivalent of 3 more papers in Nature or Science or 20 more papers in specialty journals such as Infection and Immunity or Neuroscience) to achieve the same rating as men unless they knew someone on the panel personally

- **Skill vs. luck—**

Evaluators asked to assess the contribution of skill and luck to success Subjects performing same task; identical performance

Evaluator attributed success more often to skill for men and to luck more often for women,

Research on Prejudices and Assumptions

- **Meta-analysis of studies of hiring—**
 - Aggregate of 1842 subjects over 19 studies,**
 - Applications assigned male or female name**
 - Reviewers hired male candidates more often**
 - Effect more pronounced when women are a small proportion of the pool of candidates**
- **Review of description of job performance**
 - Rated the same job performance lower if performed by a woman**
 - Difference was substantially greater when evaluator was busy or distracted**

Research on Prejudices and Assumptions

- When asked to rate contributions of competence, luck, or political skills to a person's success after reading a description of their career, evaluators attributed more to competence among men if they were "attractive" and more to political skills among women if they were "attractive"

What can we do about our prejudices and assumptions?

- Be aware
- Ask, “how would I rate this application if....”
- Discuss possible assumptions openly
- Hold ourselves and others accountable for decisions
- Don't point fingers.....we **all** have prejudices

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