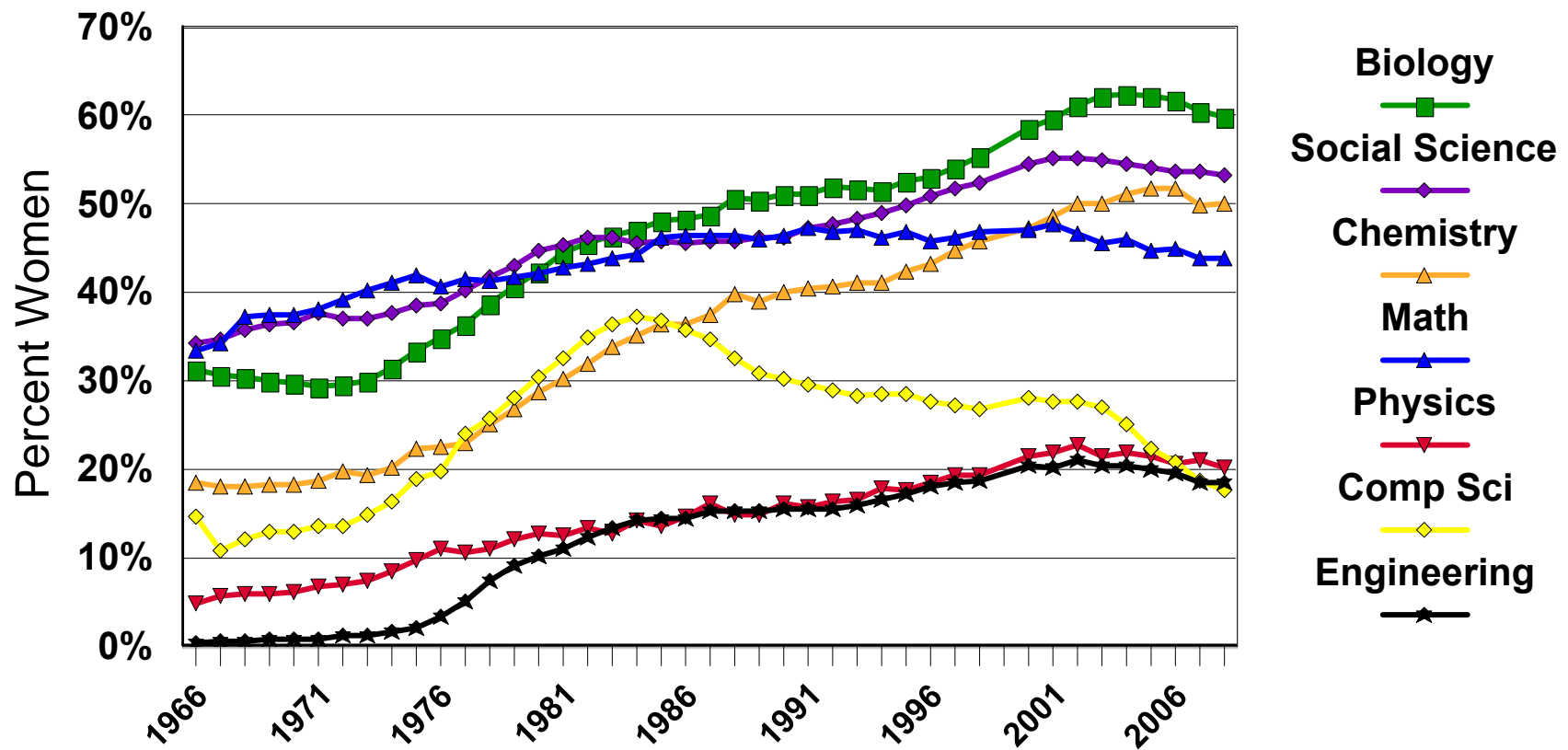


Breaking the Bias Habit

Jennifer Sheridan, Ph.D.
Executive & Research Director
Women in Science & Engineering Leadership Institute

Percent Women Bachelor's Degrees, Selected Fields 1966 - 2008

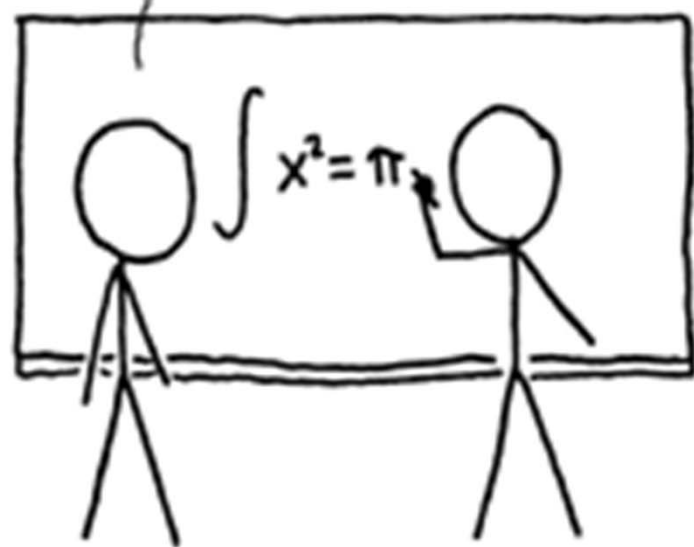


Source: National Science Foundation S&E Degrees

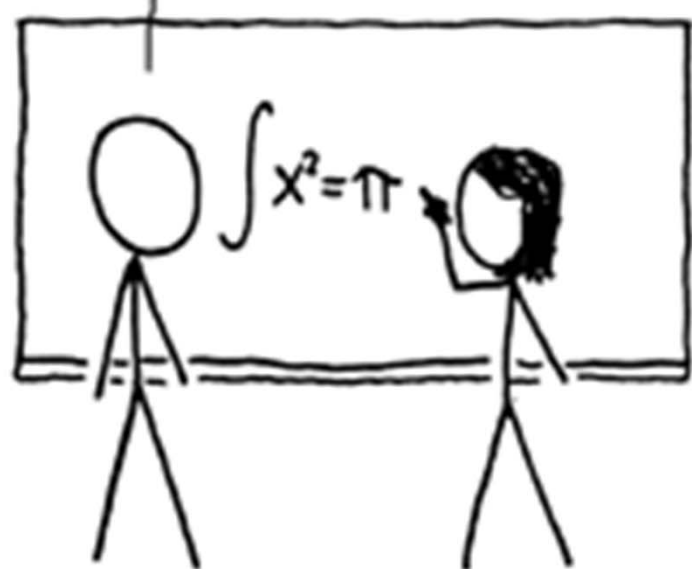
Why?

- Unconscious bias
- Tendency of our minds to evaluate individuals based on characteristics (real or imagined) of the group to which they belong
- Consequences for both the evaluator, and the person being evaluated

WOW, YOU
SUCK AT MATH.



WOW, GIRLS
SUCK AT MATH.



Three Central Ideas

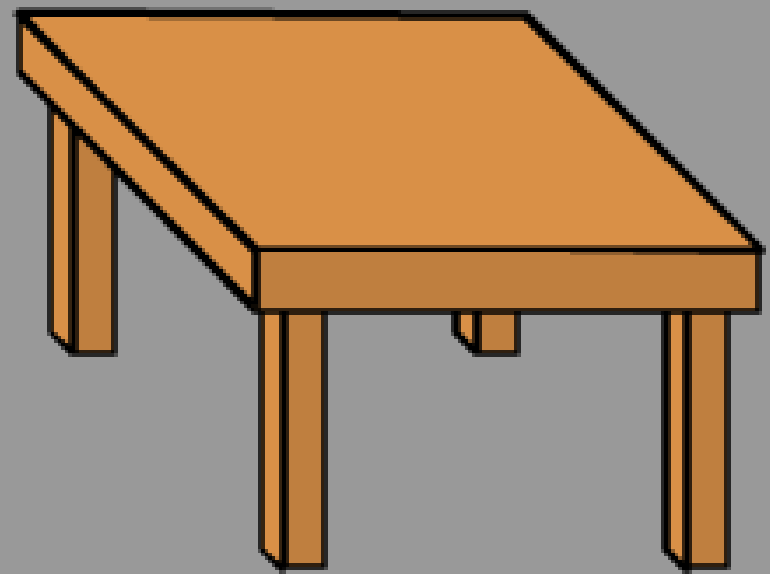
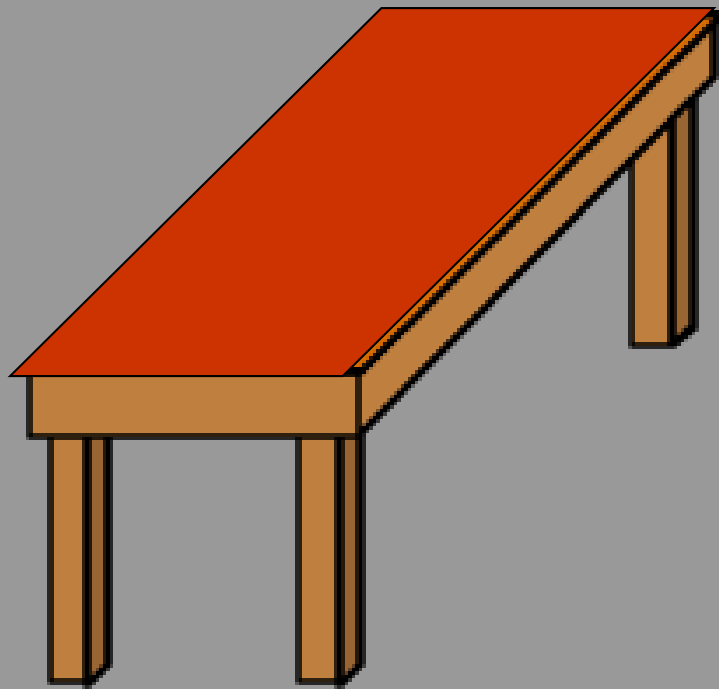
1. Our minds are more than the sum of the conscious parts
 - Implicit processes
2. Unintended thoughts can contradict beliefs
 - Prejudice as a habitual response
3. Acting consistently with beliefs can require more than good intentions
 - Breaking the prejudice habit

Prejudice and Habits of Mind

Ordinary mental operations that serve us quite well in most circumstances can fail our intentions

Essential Process...

- Translation of the world outside to a mental experience inside
 - Guided by our experience and expectations
 - Affects our perceptions, judgments, and behavior
- This translation process is not infallible
 - A variety of *habits of mind*, born out of experience, can separate our experience from reality



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Stroop Color Naming Task

Compatible Trials

RED

BLACK

BROWN

GREEN

YELLOW

BLUE

Incompatible (interference) Trials

RED

BLACK

BROWN

GREEN

YELLOW

BLUE

Construction Worker Experiment

Measuring Unconscious Bias: Gender-and-Science IAT

Logic of the IAT

- IAT provides a measure of the strength of associations between mental categories such as “male and female” and attributes such as “science and humanities” disciplines
- Strength of association between each category and attribute is reflected in the time it takes to respond to the stimuli while trying to respond rapidly
- Trial Types

Congruent Trials

Say “LEFT” for

Science

OR

Men

Say “RIGHT” for

Humanities

OR

Women

Incongruent Trials

Say “LEFT” for

Science

OR

Women

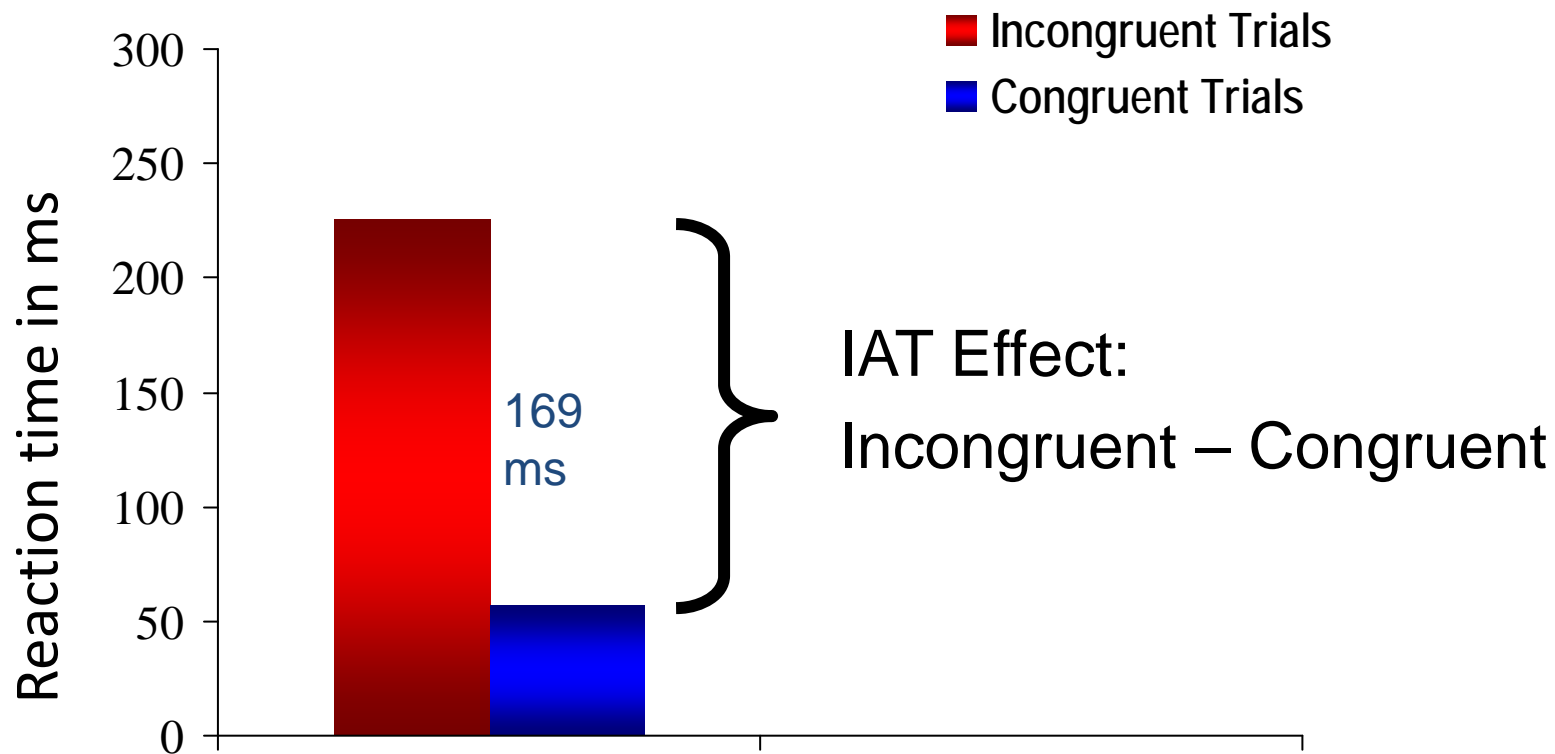
Say “RIGHT” for

Humanities

OR

Men

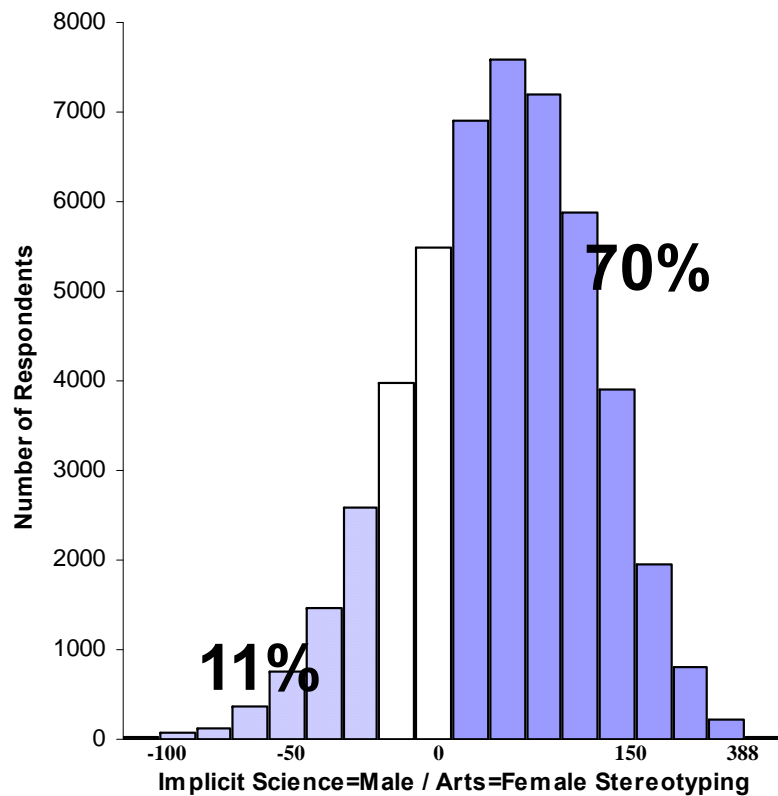
IAT Effect



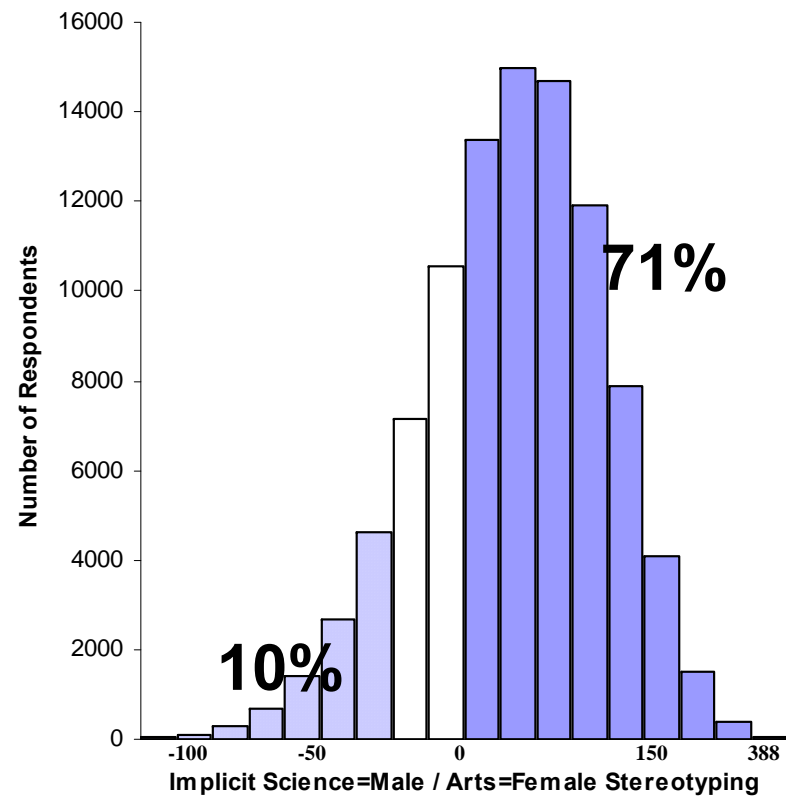
The larger the difference, the greater the bias in associating men with science and women with humanities

Implicit Gender-Science Stereotypes

Male Respondents



Female Respondents



Shift in Conceptualization of Prejudice

Old Framework = Prejudice is bad so if I think or act with bias, I am a bad person

New Framework = Prejudiced thoughts and actions are habits that we all have and breaking these habits requires more than good intentions

How does this affect students?

- Parents/teachers/counselors steer women away from “male” jobs
- Students “choose” jobs that conform to their gender stereotypes

Expectancy Bias

Expecting certain behaviors or characteristics in individuals based on stereotypes about the social category to which they belong

Stereotypes about men?

Stereotypes about women?

Role Congruity/Incongruity

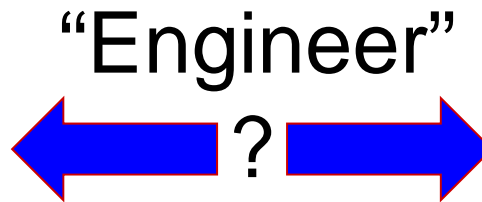
The fit (or lack of fit) between
gender norms and workplace roles

Stereotypes about engineers?

Occupational Role Congruity for men

Men

- Strong
- Decisive
- Independent
- Don't ask for directions
 - Logical
- Lack emotions
- Love sports
- Good at math



Women

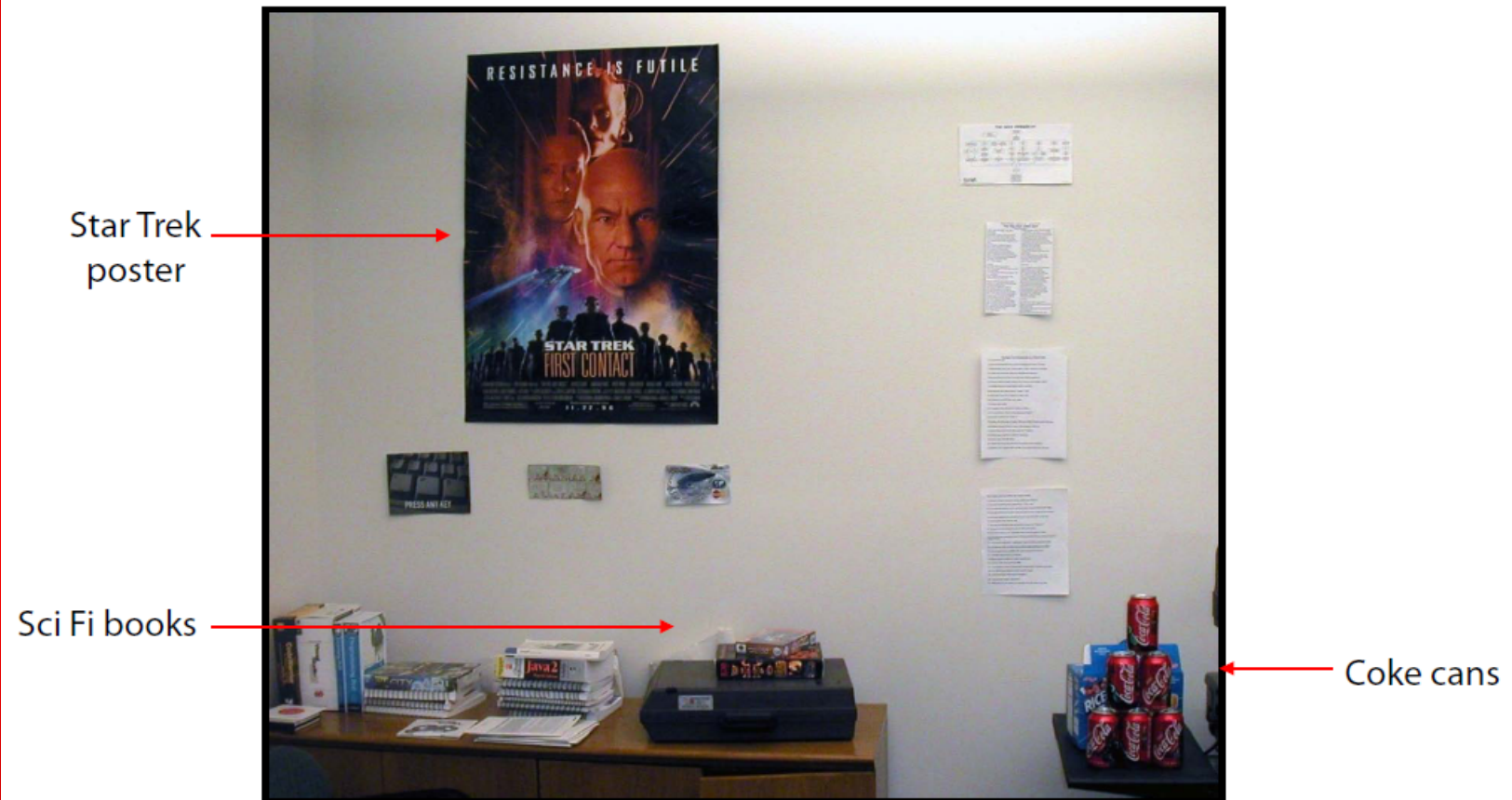
- Nurturing
 - Nice
- Supportive
 - Helpful
- Sympathetic
 - Verbal
 - Social
- Creative

Stereotype Threat

Members of negatively stereotyped groups may underperform when reminded of their group membership

Classroom Environments

Stereotypical room



Cheryan, Plaut, Davies & Steele, *Journal of Personality & Social Psychology*, 2009

Images used with permission of Dr. Sapna Cheryan

Classroom Environments

Non-stereotypical room

Nature poster

Neutral books

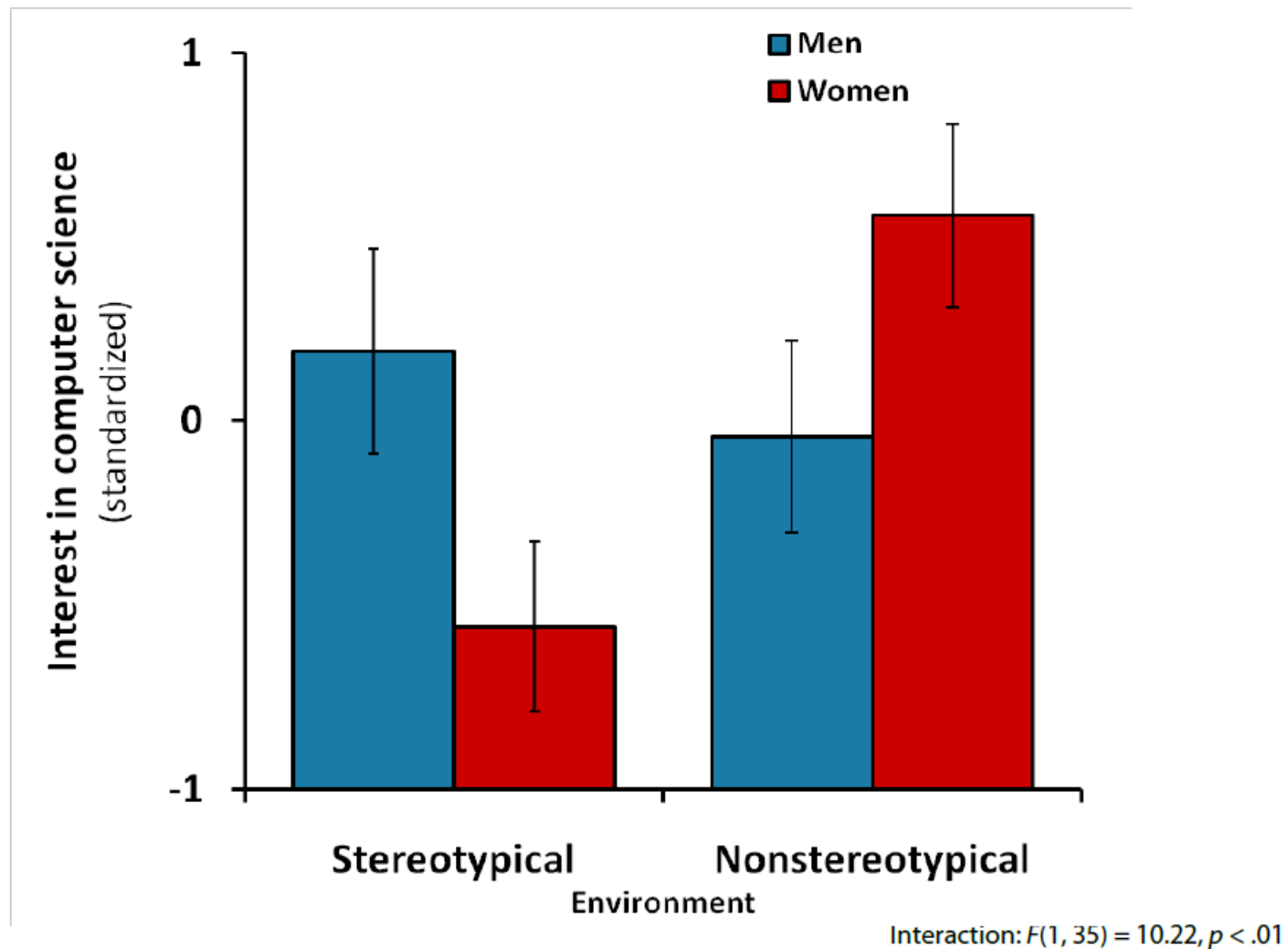


Water bottles

Cheryan, Plaut, Davies & Steele, *Journal of Personality & Social Psychology*, 2009

Images used with permission of Dr. Sapna Cheryan

Environment influences women's interest in CS



Chervan, Plaut, Davies & Steele. *Journal of Personality & Social Psychology*. 2009

Images used with permission of Dr. Sapna Cheryan

TABLE 1. Mean Comprehension Scores According to Sex and Image Condition

Image Condition	Sex		
	Female	Male	Total
Stereotypic	7.42 (SD = 3.35) n = 18	9.00 (SD = 2.18) n = 7	7.86 (SD = 3.11) n = 25
Counter-Stereotypic	9.38 (SD = 1.88) n = 16	7.70 (SD = 1.72) n = 10	8.73 (SD = 1.97) n = 26
Mixed Gender	8.37 (SD = 3.30) n = 15	8.25 (SD = 3.20) n = 12	8.31 (SD = 3.19) n = 27
Total	8.35 (SD = 2.99) n = 49	8.24 (SD = 2.50) n = 29	8.31 (SD = 2.80) n = 78

Note. Comprehension scores are out of a possible high score of 12.

Good et al. *J Soc Psychol*, 2010.

*Strategies to Reduce the Influence of
Implicit Bias*

Bias within these constructs is malleable...

Construct	Intervention	Example of study
↓ <u>Expectancy bias</u> and promote <u>role congruity</u>	Be specific about what a job or task requires, rather than use generalizations or make assumptions	Heilman ME. <i>Organ Behav Hum Perf.</i> 33(2):174-86, 1984.
↓ <u>Effect of stereotype priming</u>	Stating that “there is no gender difference in ability to perform this task” eliminated impact of priming	Davies, Spencer & Steele. <i>J Pers Soc Psych.</i> 88:276-287, 2005.
↓ <u>Impact of stereotype threat</u>	Minimizing stereotype threat by removing gender stereotype priming (e.g. pictures of men and women doing science)	Good et al. <i>J Soc Psychol.</i> 150:132-47, 2010.

Strategies That DO NOT Work

- **Stereotype Suppression** (e.g.,

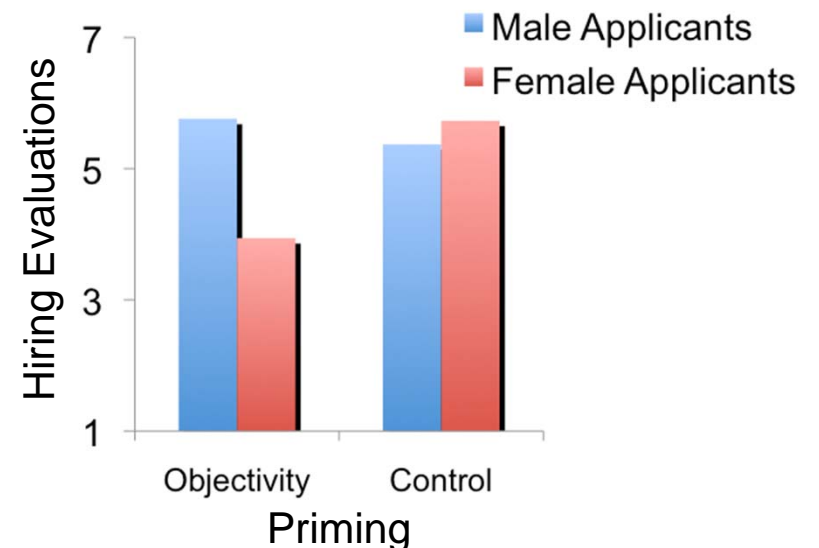
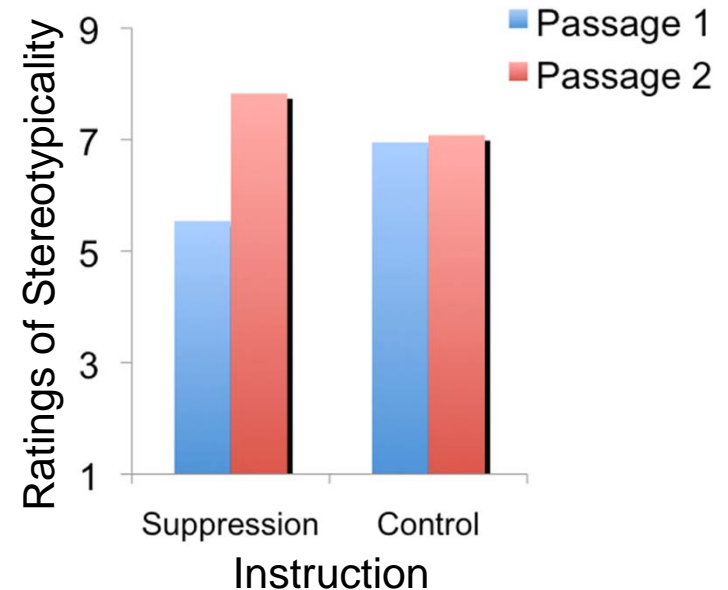
Galinsky & Moskowitz. *J Pers Soc Psychol* 2000; Monteith et al. *Pers Soc Psychol Rev* 1998)

- Banish stereotypes from one's mind (i.e., gender or race “blind”)
- Macrae et al. (1994, Experiment 2) (Macrae et al. *J Pers Soc Psychol* 1994)
- Rebound effects

- **Belief in personal objectivity**

(Uhlmann & Cohen. *Organ Behav Hum Decis Process* 2007)

- Leads to biased evaluations of women



1. Stereotype Replacement

- ✓ Recognize when you have stereotypic thoughts, and recognize stereotypic portrayals in society. For example,
 - *Women students are less interested in engineering than in social studies*
 - *Portrayal of females as poor at math or males as unable to do housework*
- ✓ Challenge the fairness of the portrayal and replace it with a non-stereotypic response. For example,
 - *I know many successful women engineers*
 - *Research does not support a gender difference in math performance once we control for the number of math courses taken*

2. Counter-Stereotype Imaging

- ✓ Help regulate your response by imagining a counter-stereotype woman in detail
 - *e.g., Imagine an astronaut, engineer, CEO who is also a woman OR specific positive counter-stereotypical individuals you know*

3. Individuating (instead of generalizing)

- ✓ Avoid making a snap decision based on a stereotype
 - *e.g., Make gender less salient than being a scientist, physician, or engineer*
- ✓ Obtain more information on specific qualifications, past experiences, etc. before making a decision
- ✓ *Practice making situational attributions rather than dispositional attributions*
 - *e.g., If a woman does poorly on an exam, consider a situational explanation (maybe she didn't get enough sleep) rather than a dispositional explanation (e.g., she's terrible at math)*

4. Perspective-Taking

- ✓ Adopt the perspective (in the first person) of a member of the stigmatized group
 - *For example, imagine what it would be like to...*
 - *Have your abilities called into question*
 - *Not be offered opportunities because of assumptions about what fields you will like*

5. Increasing Opportunities for Contact

- ✓ Seek out opportunities for greater interaction with counter-stereotypic women
 - *e.g., Ensure guest teachers or speakers brought into the school are diverse,*

Breaking the Prejudice Habit

- Not necessarily easy
- With effort (awareness, motivation, and a sustained commitment), prejudice is a habit that can be broken
 - Can expect that you may slip up
 - Stay committed
- Strategies we provided are powerful tools to combat implicit biases
 - Implicit responses can be brought into line with explicit beliefs

Continue the Conversation

- What curricular and extracurricular STEM activities are currently offered at your school?
- How diverse is the population of students participating in those activities?
- What is your school currently doing to foster gender diversity in STEM activities?
- What are the challenges?