Breaking the Bias Habit

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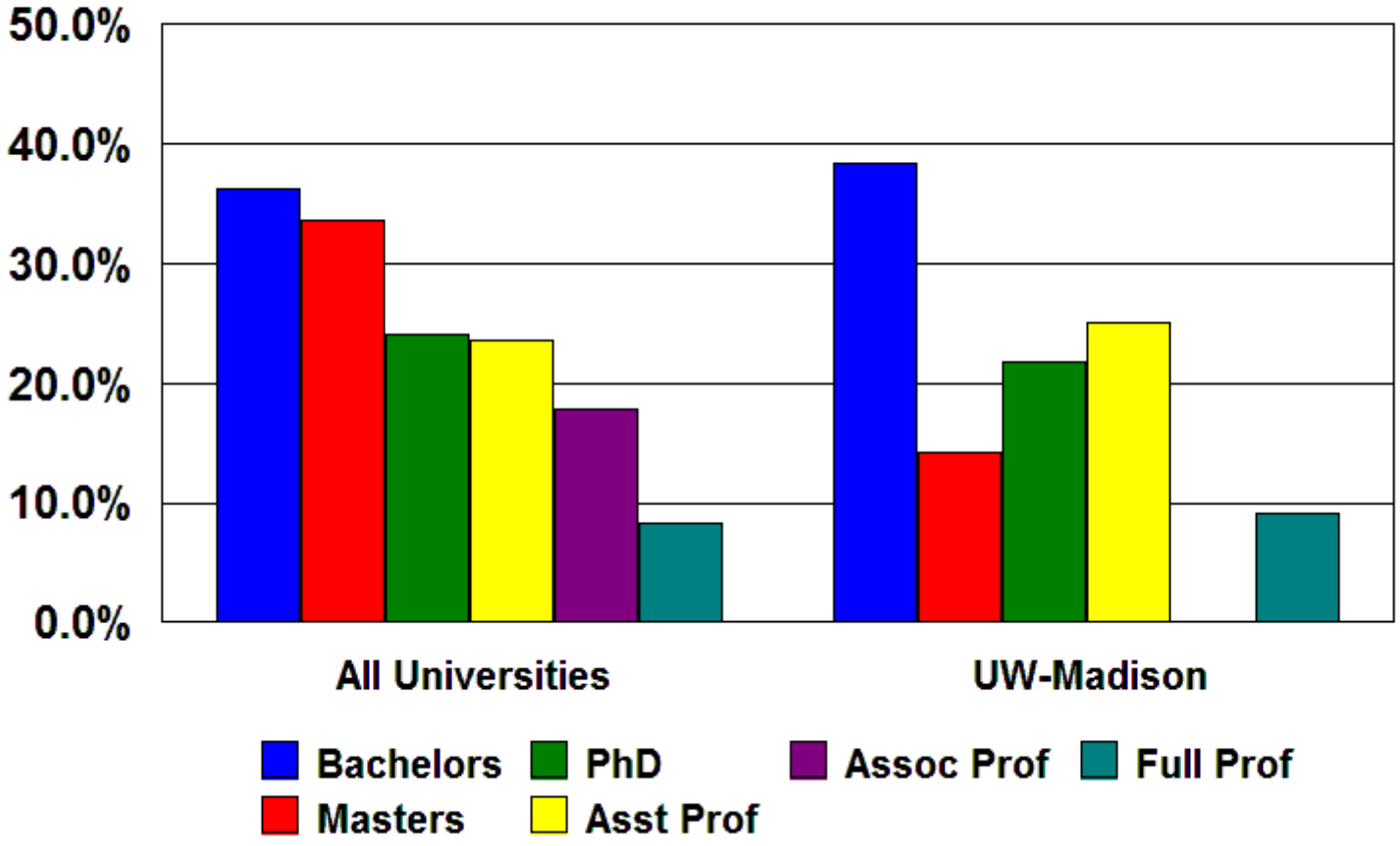
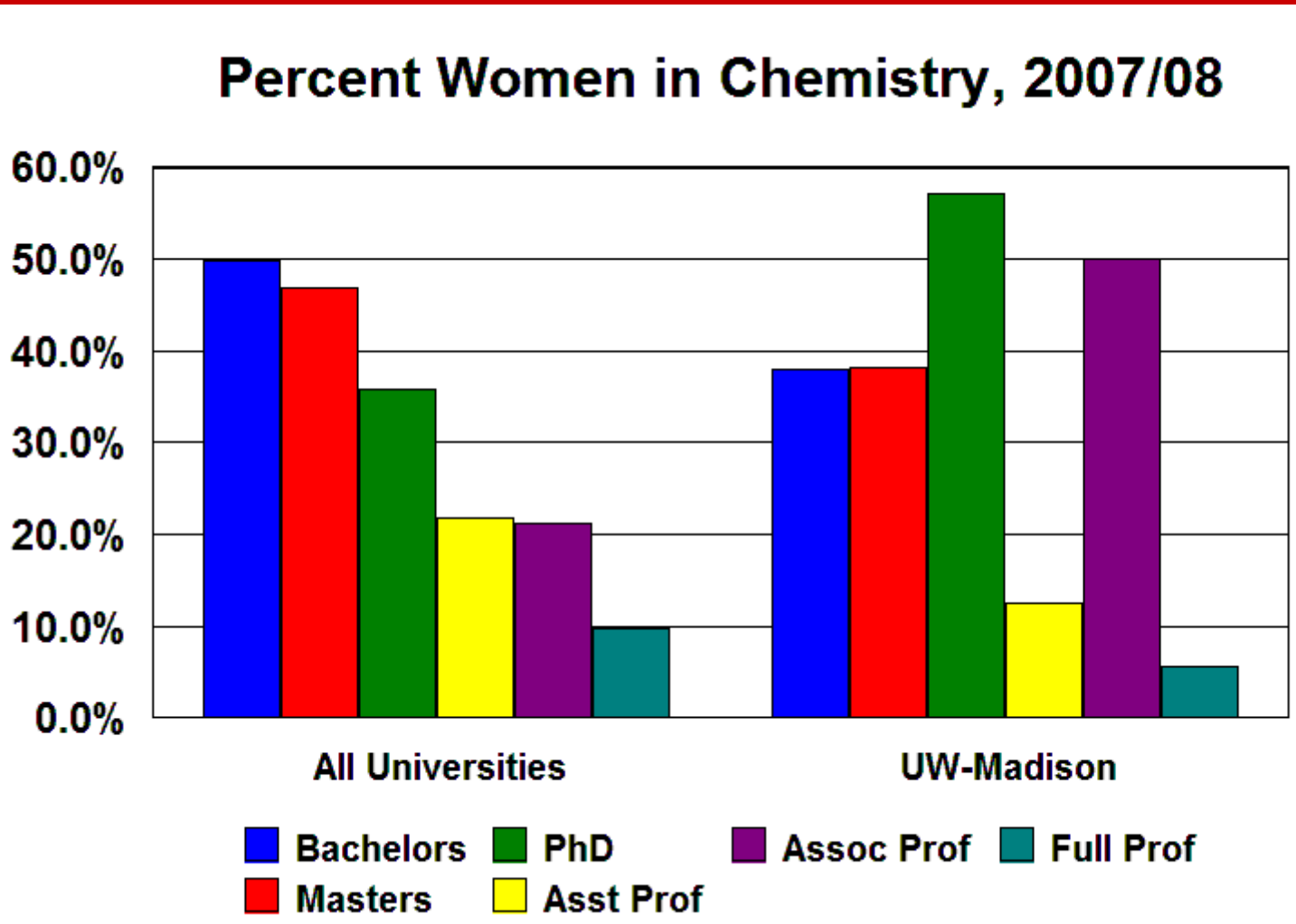
Executive & Research Director
Women in Science & Engineering Leadership Institute

Percent Women in Chemical Engineering, 2007/08




Percent Women in Chemistry, 2007/08
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
All Universities
UW-Madison
Bachelors
Masters
PhD
Asst Prof
Assoc Prof
Full Prof

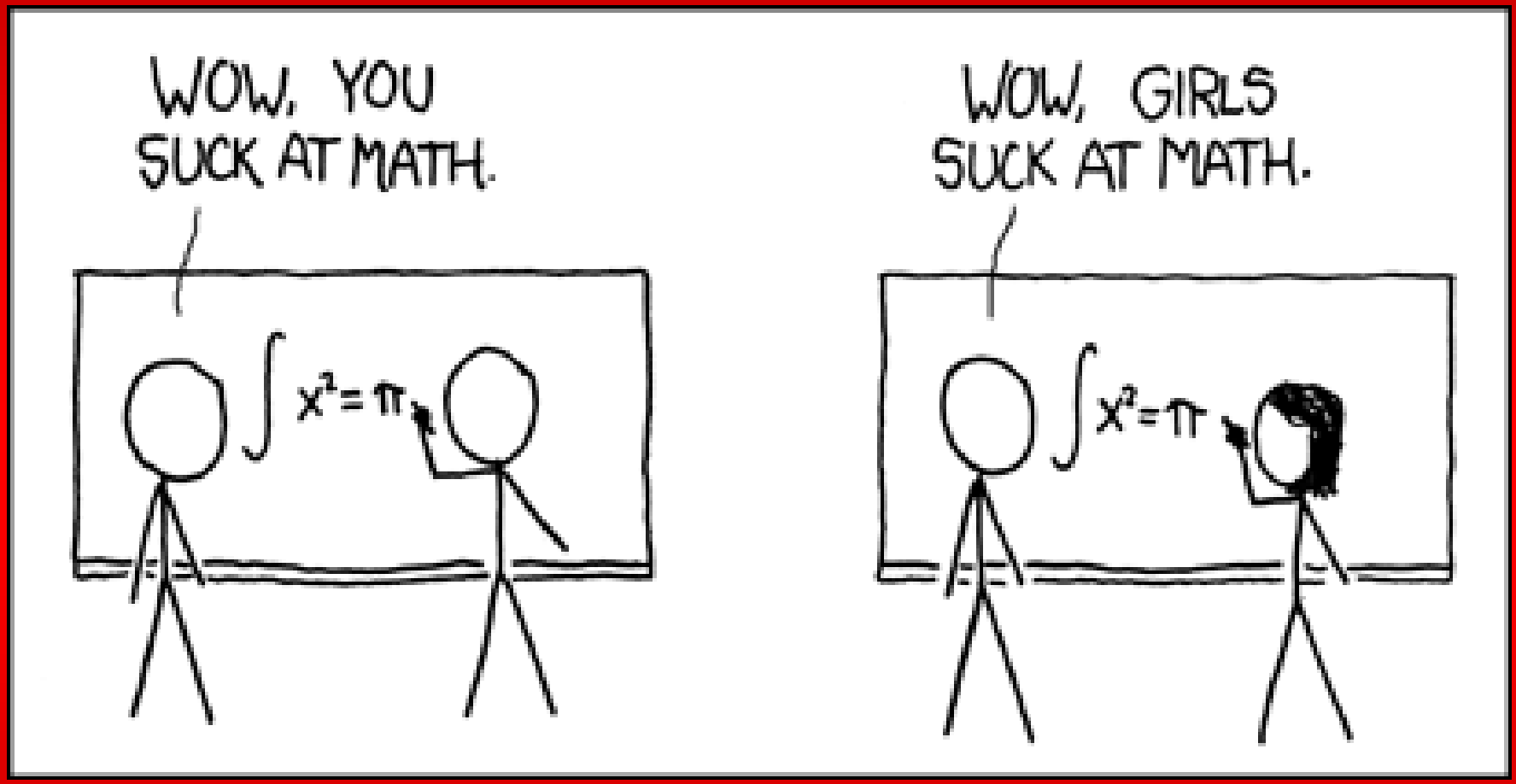
Why do you think it is important to have a diverse faculty and student body in science and engineering?

Why Diversity?

- Diverse working groups are more productive, creative, and innovative than homogeneous groups
- Diverse groups engage in a higher level of critical analysis than do homogeneous groups
- Diverse scholars and professionals can invigorate and expand disciplines and fields
- Mentors and role models for all
- Fairness and equity

Why the Lack of Diversity?

- 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.
$\int x^2 = \pi$
WOW, GIRLS SUCK AT MATH.
$\int x^2 = \pi$

Three Central Ideas

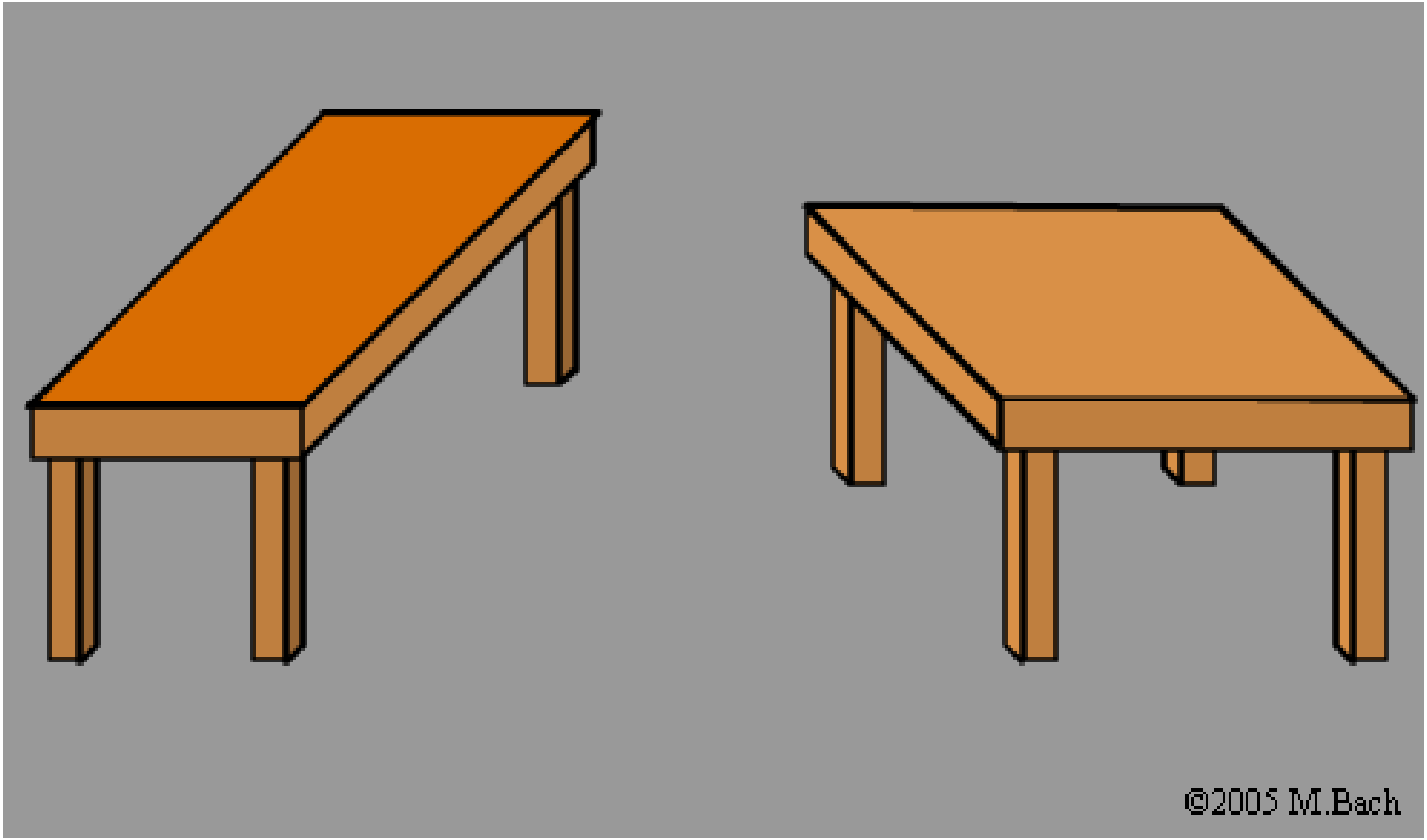
1. Our minds are more than the sum of the conscious parts
   - Implicit processes
2. Unintended thoughts can contradict beliefs
   - Prejudice as a habitual response
3. Acting consistently with beliefs can require more than good intentions
   - Breaking the prejudice habit

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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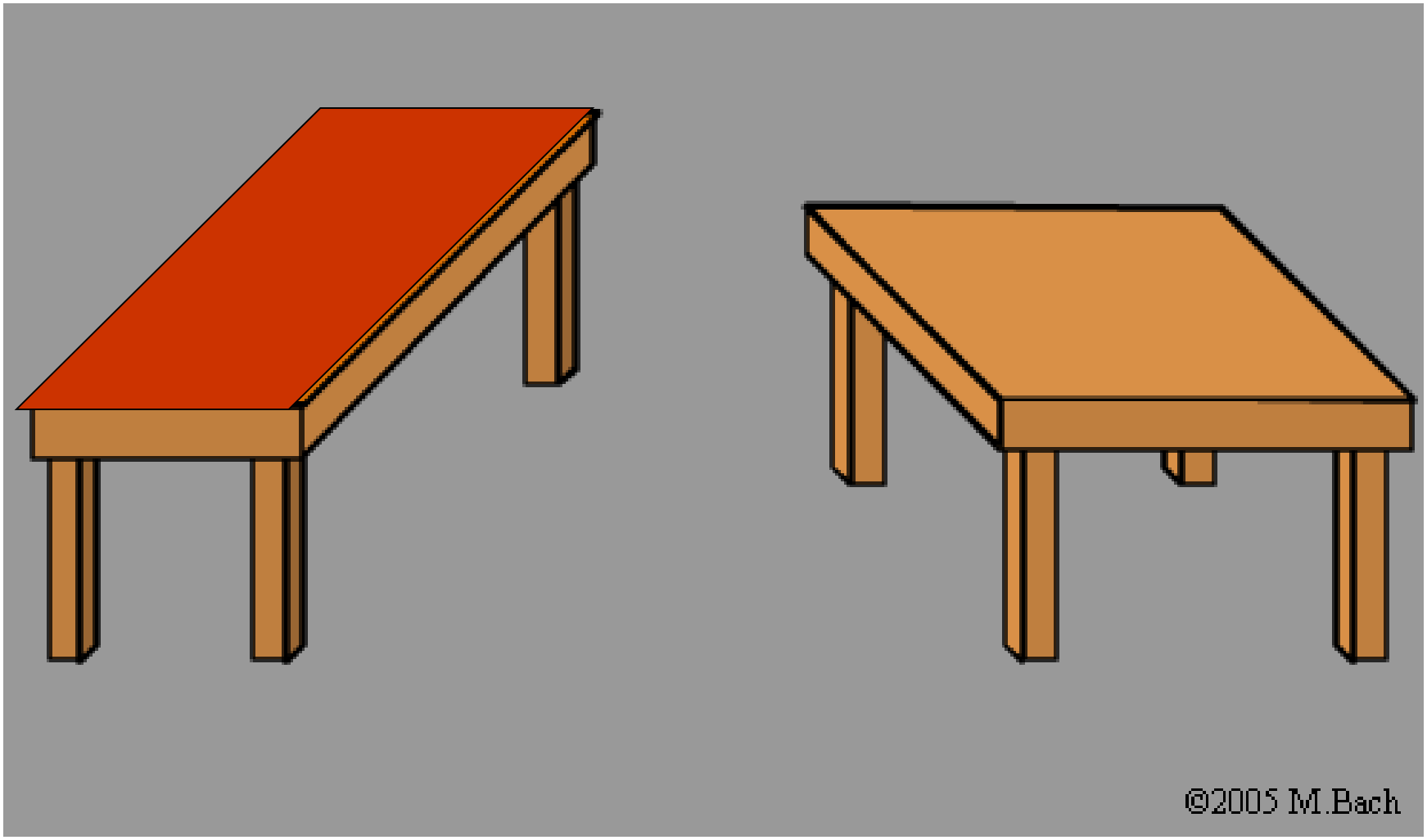
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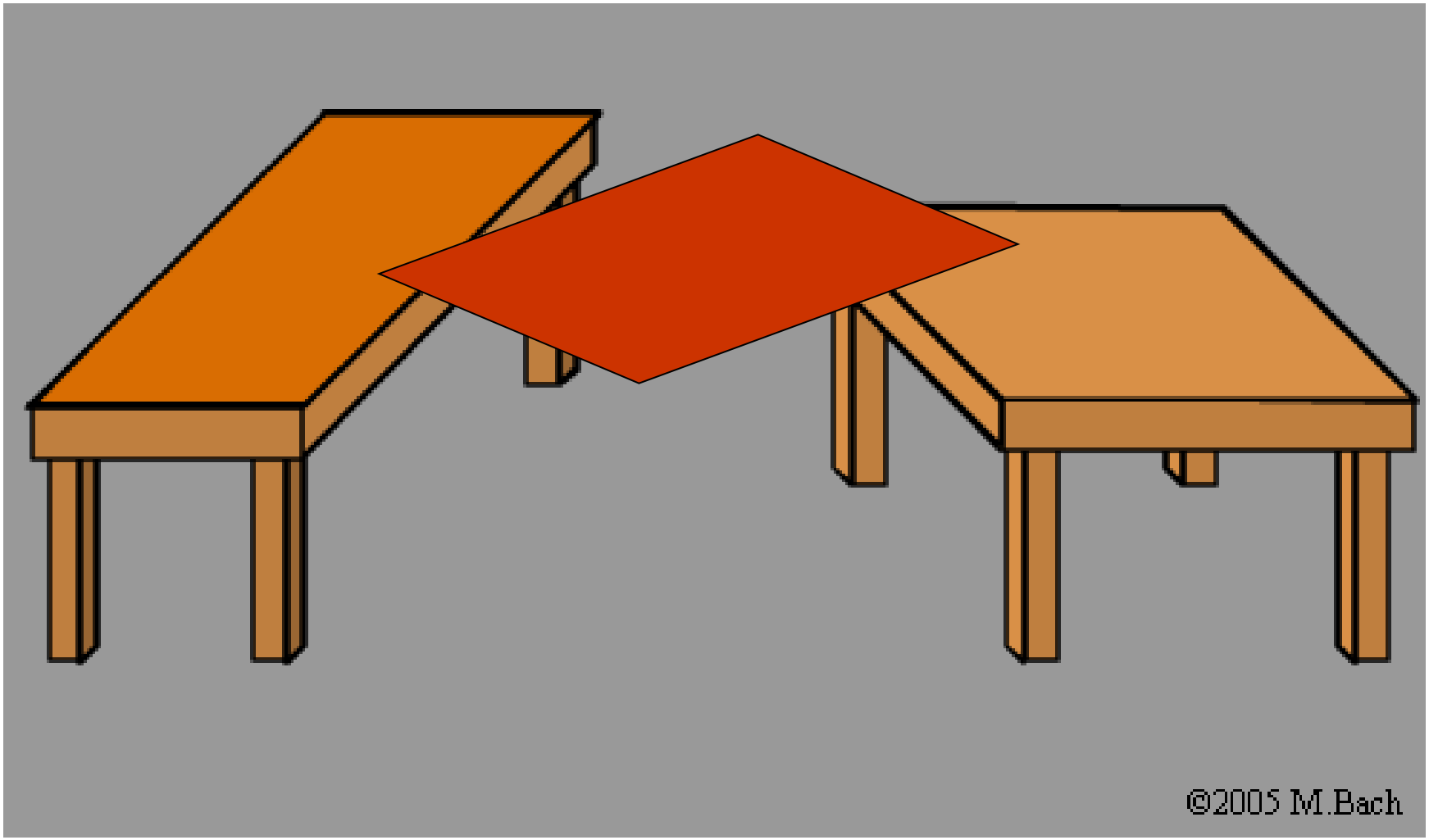
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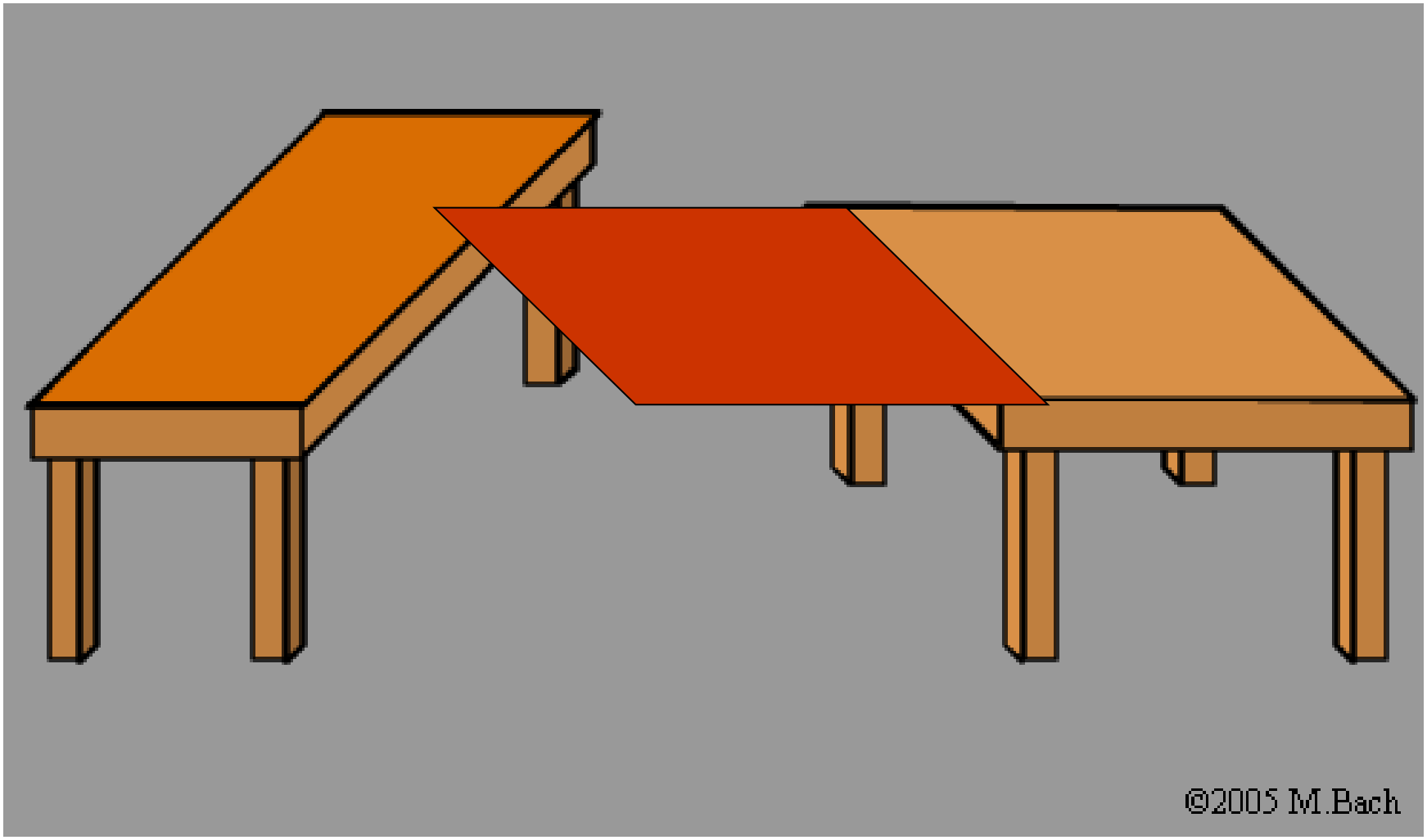
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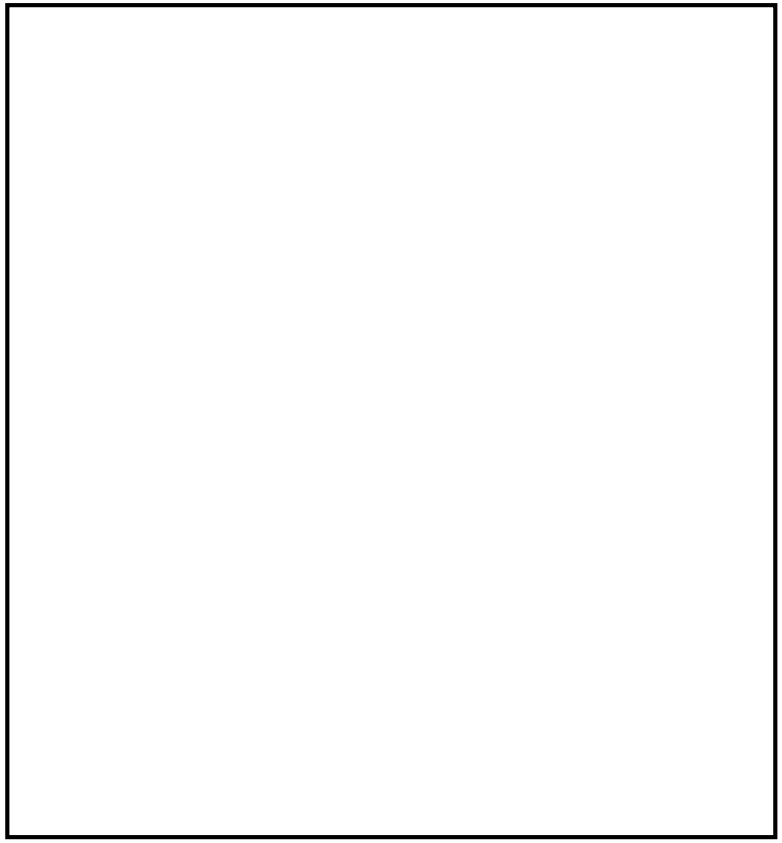
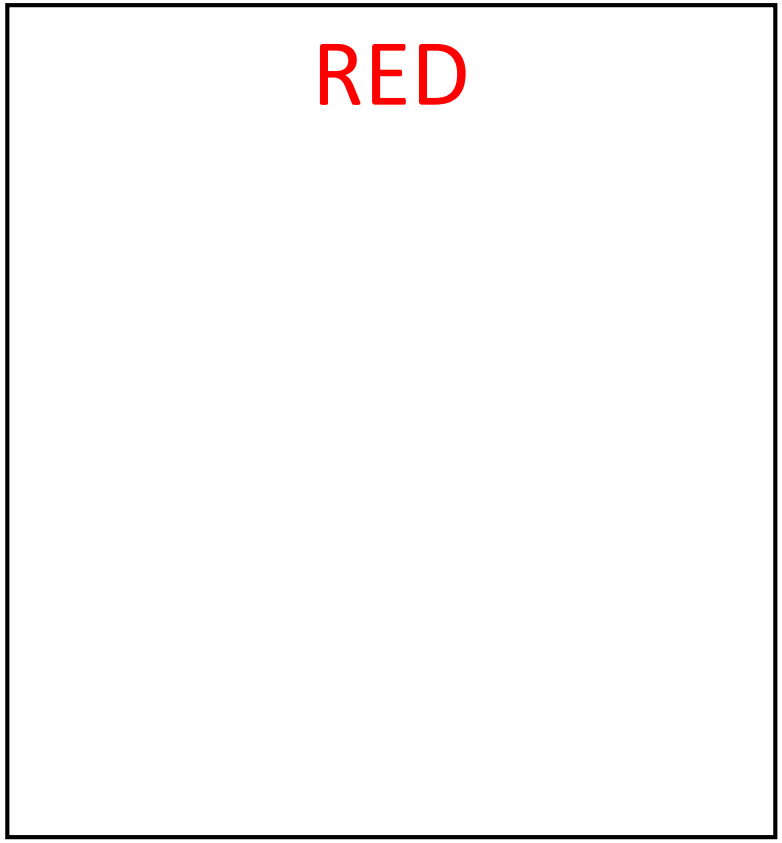
Stroop Color Naming Task

Compatible Trials



Stroop Color Naming Task

Compatible Trials



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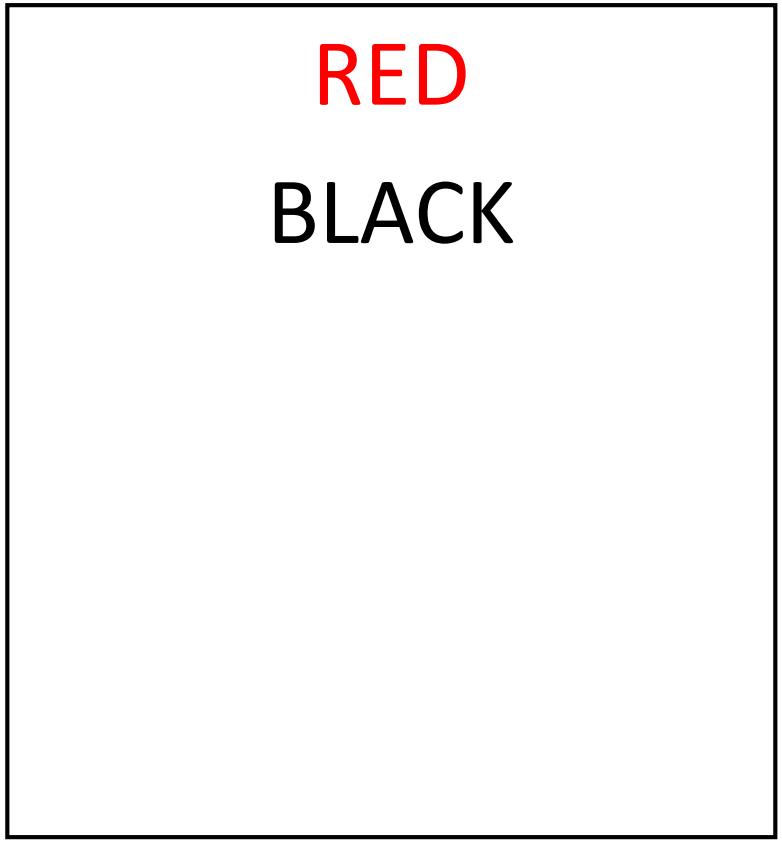

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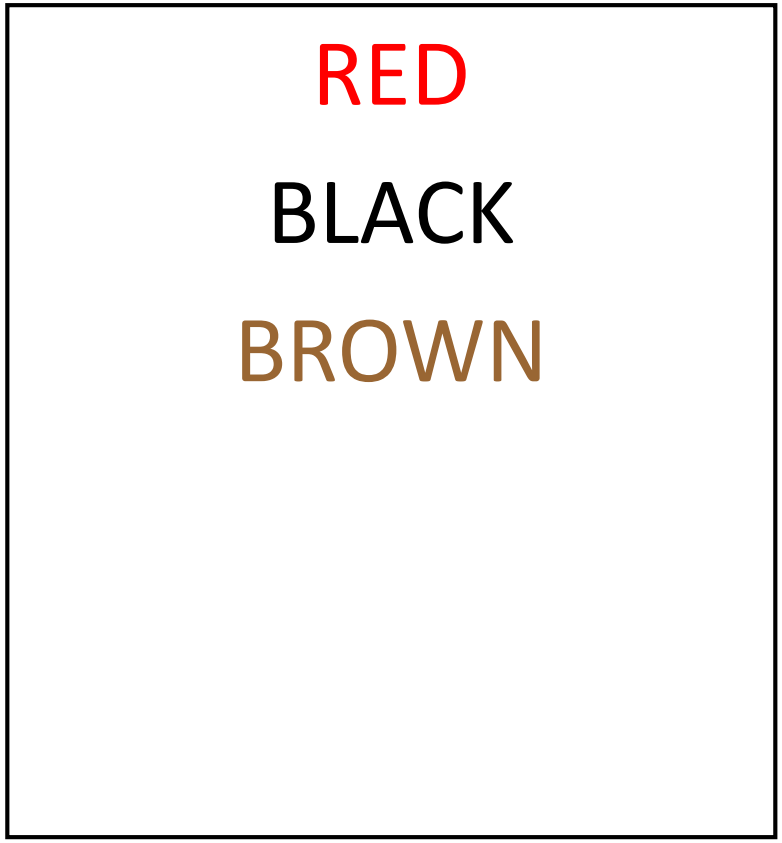

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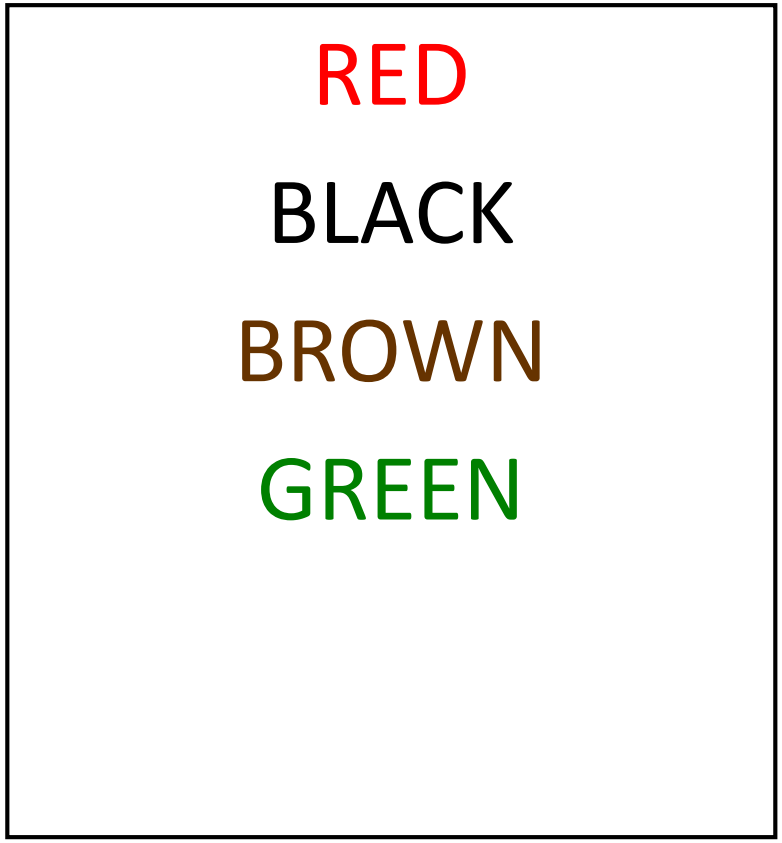


Stroop Color Naming Task

Compatible Trials

RED

BLACK

BROWN

GREEN

YELLOW

Stroop Color Naming Task

Compatible Trials

RED

BLACK

BROWN

GREEN

YELLOW

BLUE

Stroop Color Naming Task

Compatible Trials

RED

BLACK

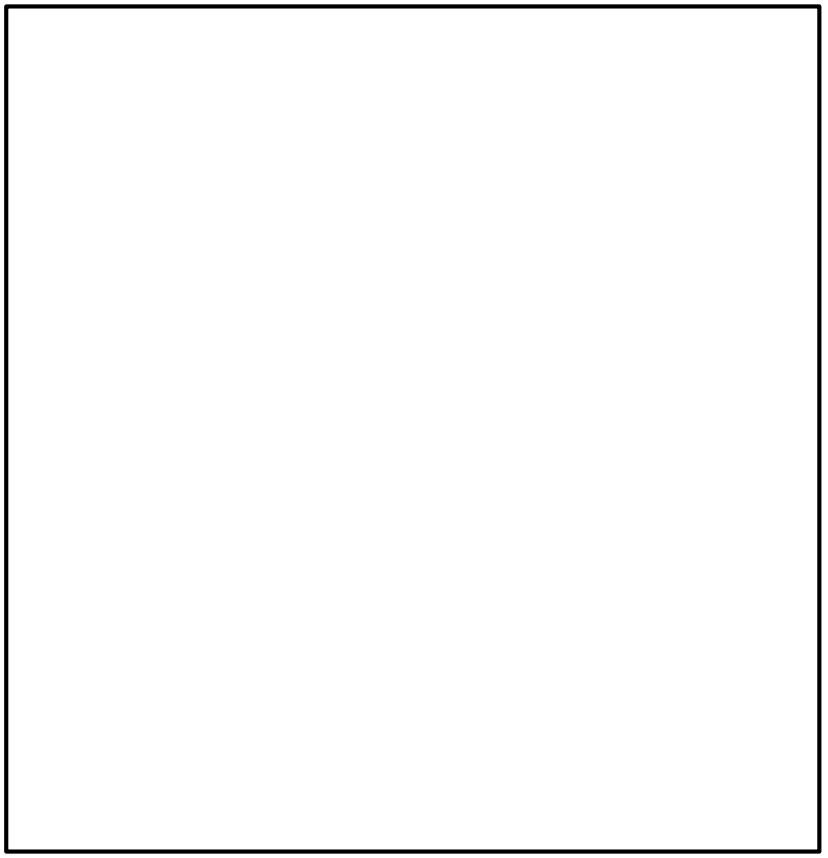
BROWN

GREEN

YELLOW

BLUE

Incompatible (interference) Trials



Stroop Color Naming Task

Compatible Trials

RED

BLACK

BROWN

GREEN

YELLOW

BLUE

Incompatible (interference) Trials

RED

Stroop Color Naming Task

Compatible Trials

RED

BLACK

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GREEN

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YELLOW

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RED

BLACK

BROWN

GREEN

YELLOW

Stroop Color Naming Task

Compatible Trials	Incompatible (interference) Trials
RED	RED
BLACK	BLACK
BROWN	BROWN
GREEN	GREEN
YELLOW	YELLOW
BLUE	BLUE

Construction Worker Experiment

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

Applications of Unconscious Bias in an Academic Setting

- Role Congruity/Incongruity
- Stereotype Threat

Stereotypes about men?

Stereotypes about women?

Role Congruity/Incongruity

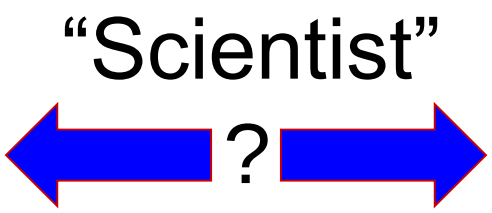
The fit (or lack of fit) between gender norms and workplace roles

Stereotypes about scientists?

Occupational *Role Congruity* for men

Men

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



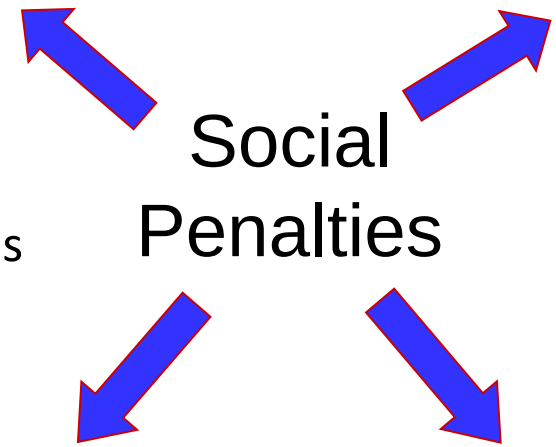
Women

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

Social Penalties for Women

Men

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



Women

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- Helpful
- Sympathetic
- Verbal
- Social
- Creative

Hiring Lab Managers

Gender Bias in a Science Setting

- 127 faculty from Physics, Chemistry and Biology departments
- Evaluated an application for an entry-level Lab Manager position for:
  - Competence
  - Hireability
  - Likability
  - Starting Salary
  - Willingness to Provide Mentoring
- Application randomly assigned name “Jennifer” or “John”

Moss-Racusin et al. 2012.

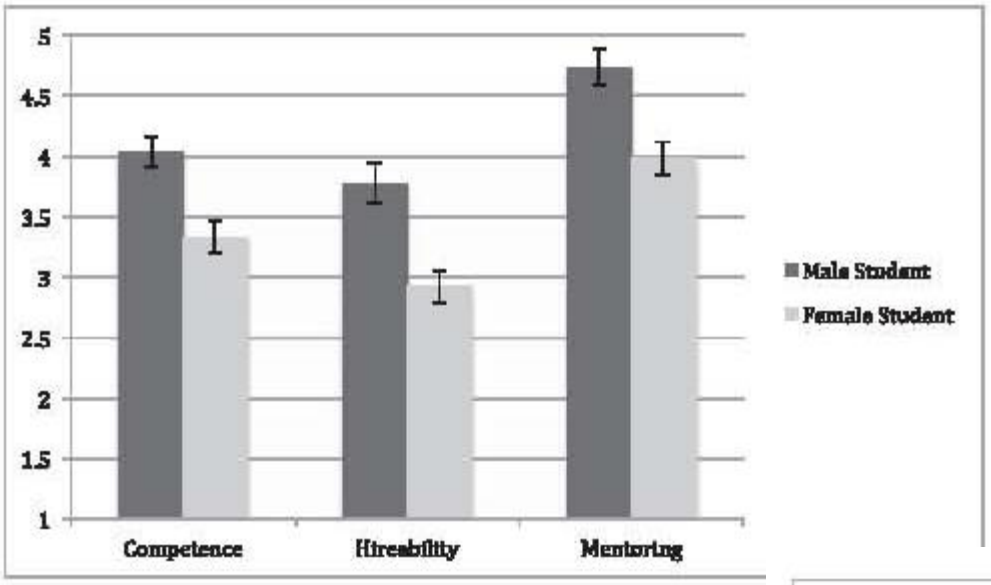


Fig. 1. Competence, hireability, and mentoring by student (collapsed across faculty gender). All student gender differen ($P < 0.001$). Scales range from 1 to 7, with higher numbers re extent of each variable. Error bars represent SEs. $n_{\text{male stu}}$ $n_{\text{female student condition}} = 64$.

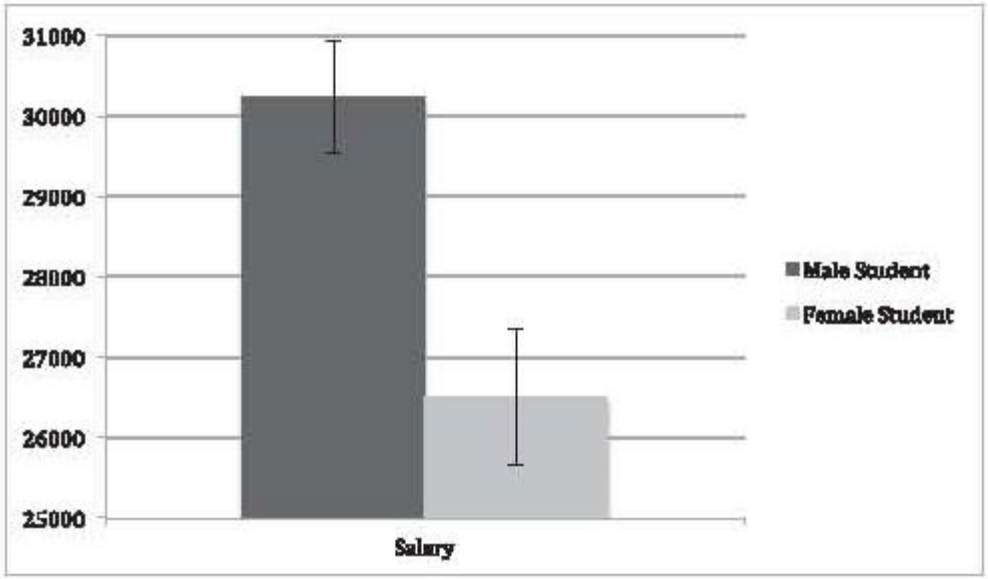


Fig. 2. Salary conferral by student gender condition (collapsed across faculty gender). The student gender difference is significant ($P < 0.01$). The scale ranges from \$15,000 to \$50,000. Error bars represent SEs. $n_{\text{male student condition}} = 63$, $n_{\text{female student condition}} = 64$.

Moss-Racusin et al. 2012.

Stereotype Threat

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

Stereotype Threat When Choosing Major

- 39 undergraduate students, non-declared major
- Entered room in two conditions:
  - Stereotypical computer science objects
  - Non-stereotypical objects
- Filled out a questionnaire measuring level of interest in computer science as a major

Cheryan et al. 2009.

Classroom Environments

Stereotypical room

Star Trek poster

Sci Fi books

Coke cans

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

Images used with permission of Dr. Sapna Cheryan

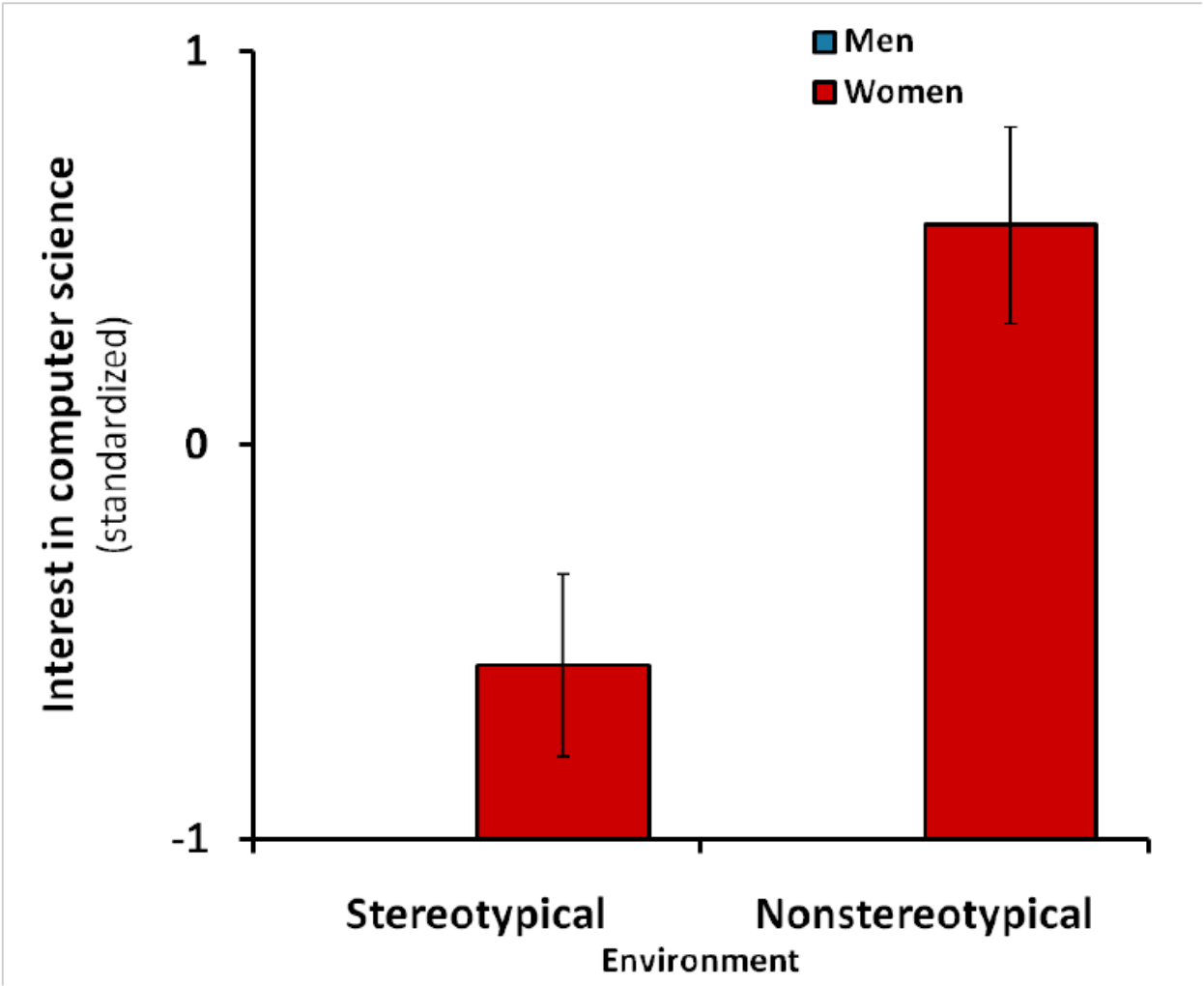
Classroom Environments

Non-stereotypical room

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



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

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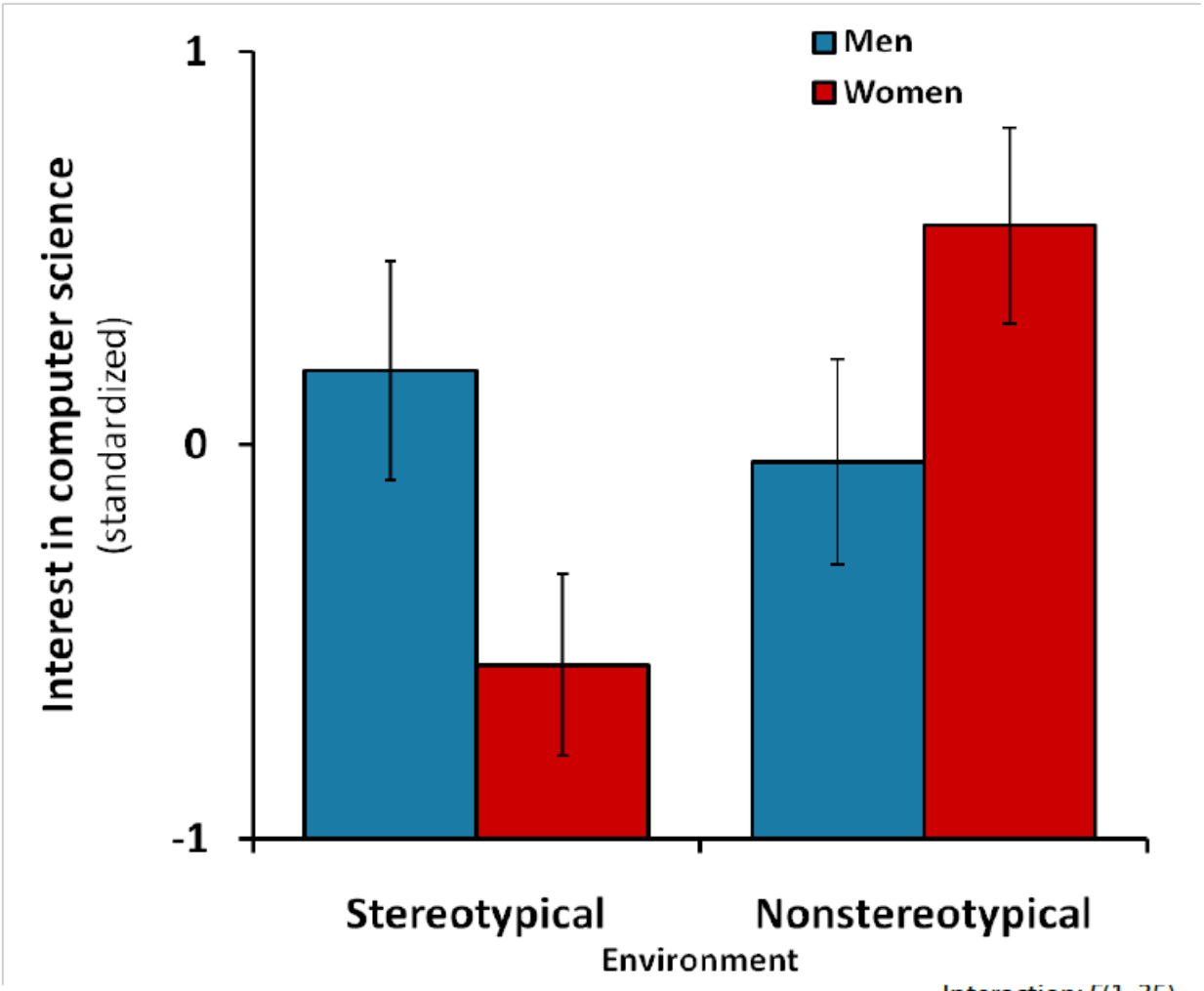

Cheryan, Plaut, Davies & Steele. *Journal of Personality & Social Psychology*, 2009

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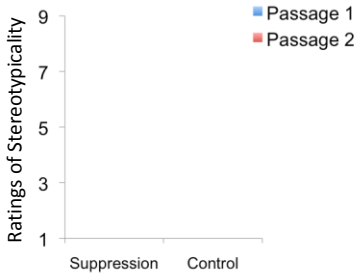
Strategies to Reduce the Influence of Implicit Bias

Strategies to Reduce the Influence of Implicit Bias

- Personal actions
- Actions in the lab or classroom

Personal Bias-Reducing Strategies

- Strategies that DO NOT WORK:
  - Stereotype suppression



  - Belief in personal objectivity

Personal Bias-Reducing Strategies

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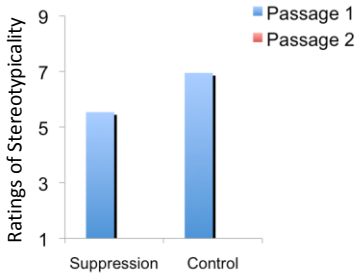

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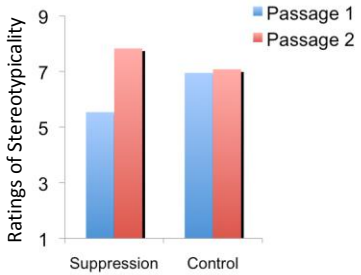

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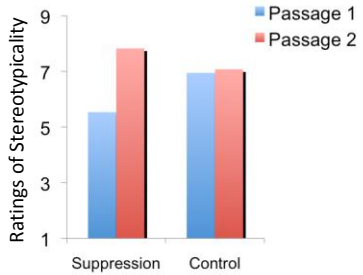

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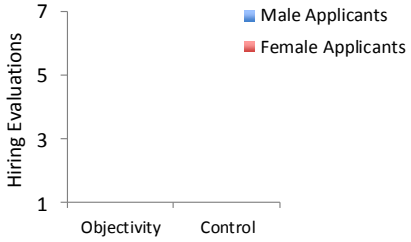

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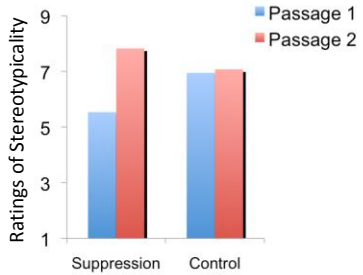

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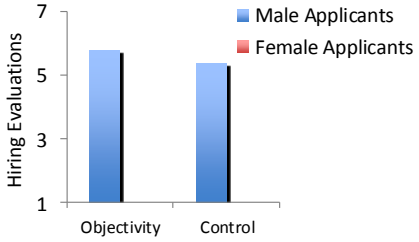

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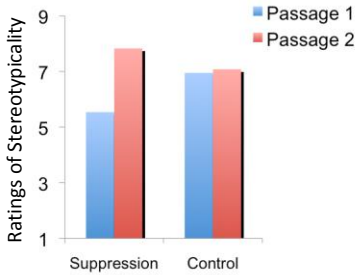

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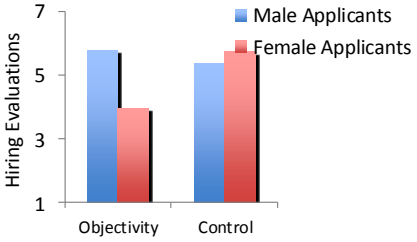

Strategy 1 – Stereotype Replacement

Steps to take…	Examples
Recognize when you have stereotypic thoughts. Recognize stereotypic portrayals in society.	• *Women students are less interested in engineering than in social science* • *Portrayal of females as poor at math or males as unable to do housework*
Label the characterization as stereotypical.	• *Men as agentic, women as communal*
Identify precipitating factors.	• *Priming with gender-congruent information*
Challenge the fairness of the portrayal and replace it with a non-stereotypic response.	• *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*

STRATEGY 2. Counter-Stereotype Imaging

Steps to take…	Examples
Help regulate your response by imagining a counter-stereotype woman in detail.	• *Imagine an astronaut, engineer, CEO who is also a woman* • *Think about specific positive counter-stereotypical individuals you know*

Strategy 3. Individuating (vs. generalizing)

Steps to take…	Examples
Avoid making a snap decision based on a stereotype.	• *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.	• *If a woman does poorly on an exam, consider a situational attribution (not enough sleep) rather than a dispositional attribution (she's terrible at engineering)*

STRATEGY 4. Perspective-Taking

Steps to take…	Examples
Adopt the perspective (in the first person) of a member of the stigmatized group.	*Imagine what it would be like to…* • *Have your abilities called into question* • *Be viewed as less committed to your career than colleagues with similar training and effort* • *Not be offered opportunities because of assumptions about family responsibilities or about your research interests*

Strategy 5. Increasing Opportunities for Contact

Steps to take…	Examples
Seek out opportunities for greater interaction with counter-stereotypic women	• *Attend meetings or gatherings of minority-serving groups at your professional meetings* • *Ensure guest teachers or speakers to the class or department are diverse*

Actions to Take in the Lab or Classroom

- Address the “confidence gap”
  - Realize that stereotype threat may be at play when underrepresented persons downplay their achievements. Do not take statements of doubt in abilities at face value.
- Ensure equal opportunity in the classroom
  - Create a system to call on all students equally, for example, a deck of cards with names that can be selected at random.
- Avoid creating “tokens”
  - To the extent possible, ensure that women or URM students are not “tokens” in a lab or study group. Assign at least 2 women or 2 minorities to a group if you can.
- Monitor images
  - Ensure that artwork, pictures, photographs convey inclusive messages.
  - Ensure assignments provide inclusive examples and problems.

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

Selected References

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