

## Physics 4810 / 7810: Perfect 10 - who are we really teaching?

Day 17: Fa2008:

Gender, Race  
Inclusion  
Stereotype threat

Class-updates:

- feedback provided now...
- participation needs to increase for some...
- eyes to the final project
- next week society and physics education



## Approach

We will be inclusive and respectful in our class discussion:

Respect ideas / people: DISCUSS... DEBATE  
IN CONSTRUCTIVE WAYS:

Inappropriate: "Crazy"

Appropriate: "This goes too far ... because..."

## Two Part Workshop

- Gender /Race in the big picture and its role in science (and visa versa) -- **Today**
- Rising to the concrete: local research / practice that might have something to say -- **Thurs**

"I think of these latent functions as the true goals/intentions of the more obvious functions of a particular objective"

## Phy

- 20 PhD institu
- < 20% of PhD

Table 11. Number and percent of physics deg status

	Bachelor's	
	Number	Percent
African-American	152	4
Hispanic-American	144	3
White	3711	87
Asian-American	171	4
Other	110	3
Total US Citizens	4288	100%

AIP Statistical Research Center, Enrollments and Degrees Report

Table 6. Percent of faculty positions in physics held by women, 1994, 1998 and 2002.

	1994	1998	2002
	%	%	%
<b>Academic Rank</b>			
Full professor	3	3	5
Associate professor	8	10	11
Assistant professor	12	17	16
Instructor / Adjunct	N/A	N/A	16
Other ranks	8	13	15
<b>Type of Department</b>			
PhD	5	6	7
Master's	7	9	13
Bachelor's	7	11	14
Overall	6	8	10

AIP Statistical Research Center: 2002 Academic Workforce Survey.

## A common language

Schiebinger's definitions: (pg 8 &16)

**Gender** - power relations between the sexes

**Female / Male**- biological sex

**Feminine / Masculine** -idealized mannerisms and behaviors of women / men in a particular culture - might also be adopted by other sex

**Gender ideologies**- acceptable traits for men and women

**Gender identity**: - how any individual appropriates aspects of gender ideology

**Gender ascription** - behaviors expected of an individual based on sex

?

### M/C Question

- a) Science is gendered but only through practice (the content, subject matter is neutral)
- b) Science is gendered in both content and practice
- c) Science is not gendered
- d) It depends on specific activities (some science is, some is not)

??

### Content and Culture

- Culture of science gendered?
  - Participation / Inclusion
  - Practices -- how we go about science
  - Assessments - SAT, GRE(!), FCI
  - History
  - Social Practices
- Content Gendered?
  - Is "turning the crank" of science gendered?
    - "To me there's only one way of doing science: It is procedural, based on informed conjecture and on empirical evidence."
  - What's social about  $F = ma$  ?
  - How do we decide what questions get asked?

### Exercise

- Come up with a classroom practice that is gendered
- Come up with a science practice that is gendered

### Is this a matter

- Of privilege and power?
  - It's not a matter of exclusion
  - But science is predisposed / supportive of a particular paradigm
- For the marginalized to solve?

"In matters of race [and gender] we often assume that when a situation is objectively the same for different groups, it is experienced in the same way by each group." - Steele

it makes no sense to me to ignore the differences in where we come from and who we are as students. It seems like another DUH moment tho.

**Amendment 46:** Prohibit state from discriminating against or granting preferential treatment to any individual or group on the basis of race, sex, color, ethnicity, or national origin in the operation of public employment, public education, or public contracting

### Reigning paradigms

As for the "queen bees", I have previously heard of women who "pull the ladder up after them". What is the source of this behavior?

## Mechanisms of Bias

- Implicit Bias
- Stereotype Threat

## Implicit Bias?

- <https://implicit.harvard.edu>
- It is well known that people don't always 'speak their minds', and it is suspected that people don't always 'know their minds'. Understanding such divergences is important to scientific psychology.

Select a Test

Gender-Science IAT	<b>Gender - Science.</b> This IAT often reveals a relative link between liberal arts and females and between science and males.
Religion IAT	<b>Religion (Judaism - Other Religions) IAT.</b> This IAT requires the ability to recognize religious symbols from various world religions, especially Judaism.
Asian IAT	<b>Asian American (Asian - European American) IAT.</b> This IAT requires the ability to recognize faces and Asian American faces and images of objects that are either American or foreign in origin.
Gender-Career IAT	<b>Gender - Career.</b> This IAT often reveals a relative link between family and female and between career and male.
Race IAT	<b>Race (Black - White) IAT.</b> This IAT requires the ability to distinguish faces of European and African origin. It indicates that most Americans have an automatic preference for white over black.
Disability IAT	<b>Disability (Disabled - Ableist) IAT.</b> This IAT requires the ability to recognize symbols representing ableist and disabled individuals.
Skinned IAT	<b>Skinned (Light Skin - Dark Skin) IAT.</b> This IAT requires the ability to recognize faces and dark skinned faces. It often reveals an automatic preference for light skin over to dark skin.
Weapons IAT	<b>Weapons (Weapons - Harmless Objects) IAT.</b> This IAT requires the ability to recognize images and Black faces, and images of weapons or harmless objects.
Arab-Muslim IAT	<b>Arab-Muslim (Arab-Muslim - Other People) IAT.</b> This IAT requires the ability to distinguish names that are likely to belong to Arab-Muslims versus people of other nationalities or religions.
Presidents IAT	<b>Presidents (Presidential Popularity) IAT.</b> This IAT requires the ability to recognize photos of George W. Bush and/or other current presidents.
Weight IAT	<b>Weight (Fat - Thin) IAT.</b> This IAT requires the ability to distinguish faces of people who are obese and people who are thin. It often reveals an automatic preference for thin people over to fat people.
Age IAT	<b>Age (Young - Old) IAT.</b> This IAT requires the ability to distinguish old from young faces. This test often indicates that Americans have automatic preferences for young over old.
Sexuality IAT	<b>Sexuality (Gay - Straight) IAT.</b> This IAT requires the ability to distinguish words and symbols representing gay and straight people. It often reveals an automatic preference for straight related to gay people.
Obama-McCain IAT	<b>2008 Presidential Election IAT.</b> This IAT requires the ability to recognize images of John McCain and Barack Obama. This IAT often reveals an automatic preference for either Obama or McCain.

European American or **Bad** African American or **Good**

**Your Result**  
 Our data suggest a moderate automatic preference for \_\_\_\_\_

See above, the four categories now appear together in a new configuration. Remember, each item belongs to only one group.

The **green** and **white** labels and items may help to identify the appropriate category. Use the **E** and **I** keys to categorize items into the four groups left and right, and correct errors by hitting the other key.

Press the **space bar** to begin.

## Stereotype Threat

Stereotype threat refers to being at risk of confirming, as self-characteristic, a negative stereotype about one's group. - wikipedia

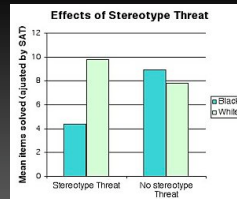
"Culturally-shared stereotypes suggesting poor performance of certain groups can, when made salient in a context involving the stereotype, disrupt performance of an individual who identifies with that group" (Steele, Aronson 1995).

## Who is vulnerable

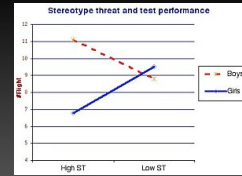
- All folks who can identify with group!
- SOCIAL IDENTITY
- Note two-fold threat:
  - Situation (all subject to)
  - Stereotype - fulfilling other's vision of the group you identify with

## Stereotype Interventions

- Addressing ST:
  - Trust
  - Fair environment / tests
  - Using high standards
  - Belief in ability to succeed
  - Remove the threat by removing stereotype
  - Building a community



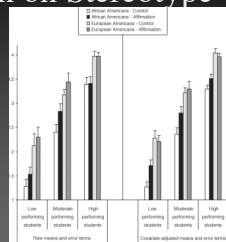
In experiment on college students in 1995 showed the impact of stereotype threat by asking students to fill out a form, indicating their race, before taking the test. The scores in this graph have been adjusted by SAT.



The effect of Stereotype Threat (ST) on math test scores for girls and boys. Data from *Linking Stereotype Threat and Anxiety*

From the wikipedia (via the internet)

## Cohen on Stereotype Threat



- Mean grade point average in the targeted class as a function of student race, experimental condition, and preintervention level of performance (an average of the prior year's GPA and preintervention inclass performance). - *Science Mag* Vol. 313, no. 5791, pp. 1307 - 1310

## Some Conclusions (from many studies)

- Stereotype threat most affects students who care about performance domain.
- Effects emerge about grade 6.
- Need not believe stereotype to experience stereotype threat.
- Subtle cues set process in motion.

## Other Examples of Stereotype Threat

- Elderly and memory
- White men and math
- Economically disadvantaged students and test performance

## Exercise

- Come up with a classroom practice that is gendered
- Come up with a science practice that is gendered