# Effective teaching in diverse classrooms

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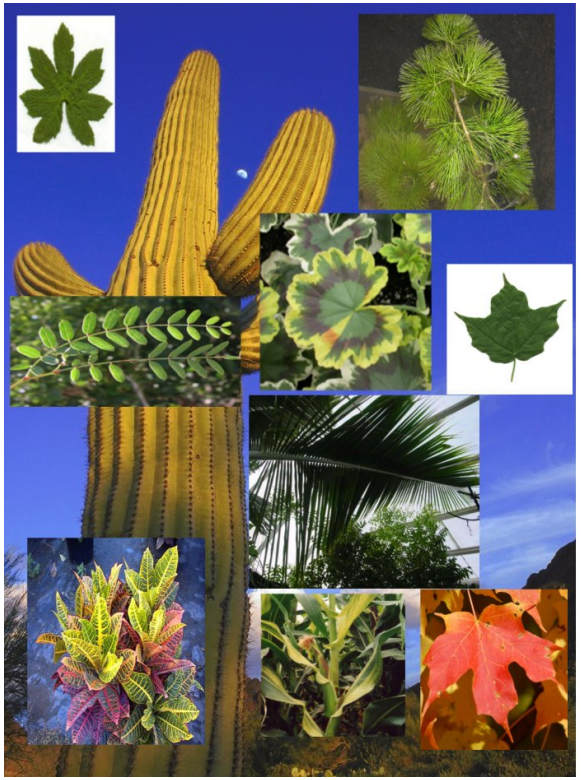
# Why think about diversity?

- Students have diverse
  - experiences
  - preferences
  - learning styles
- Teachers can provide
  - varied teaching techniques
  - inclusive, collaborative setting
- Leading to
  - improved student performance
  - preparation for future



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# Goals and topics for this session

- Increase **awareness** of obstacles to learning
  - in us and in our students
  - that especially affect marginalized groups
    - historical in/formal lack of access to institutions
- Discuss compensatory **strategies**
- Ground rules for discussion:
  - honest, diplomatic, nonjudgmental
  - shared personal experiences stay in this room
  - in summary: both act in and assume good faith

***But I treat everyone the same way…***

Part 1… maybe you don't

Part 2… even if you do

Part 3… best practices

# Part 1… maybe you don’t (treat everyone the same)

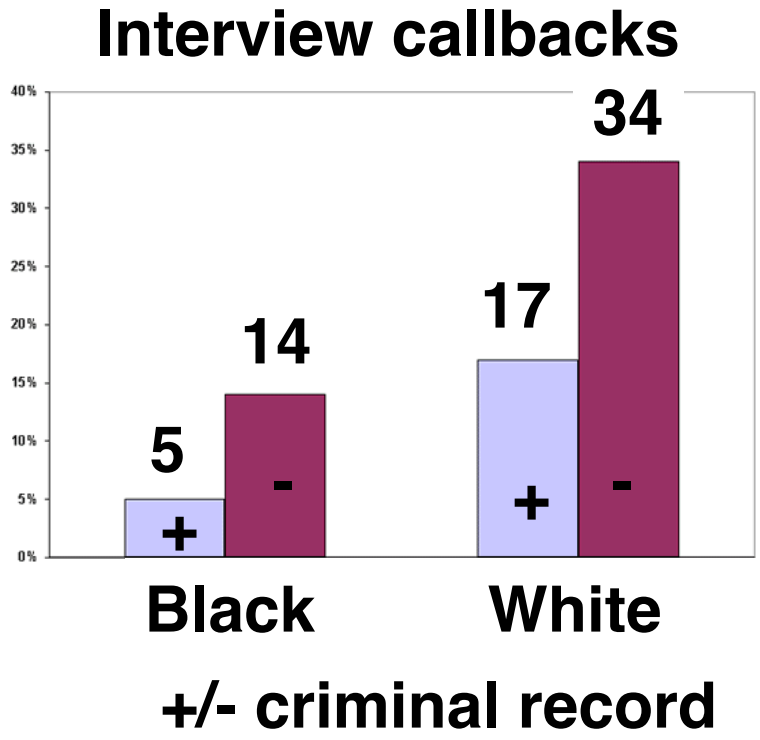
# Understanding Unconscious Bias

# What is unconscious bias?

- Implicit association test
  - typing task to measure automatic associations
- Many people display implicit bias/stereotype
- Even members of the marginalized group may internalize self-bias

# Bias linked with discrimination

- Female orchestra membership
  ↑ w/anonymous auditions
- Research fellowships
  - women need 2.5x more same-tier papers than men
- Job candidate bias
  - send *identical* resumes
  - but change name
  - sex, race effects

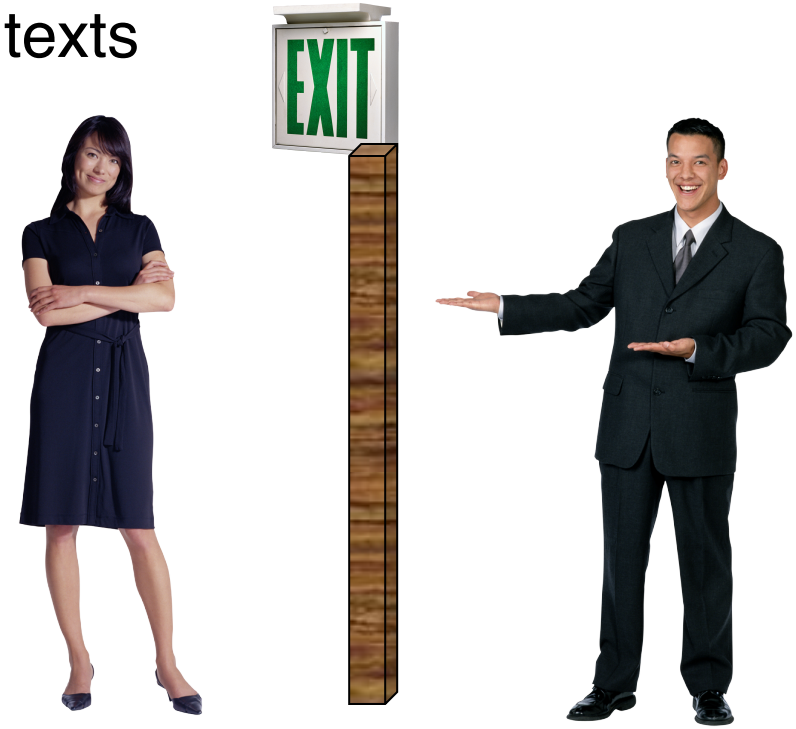



D. Pager *Am J Sociol* (2002)

# Roots of unintentional bias

- Nature *and* nurture – systemic
- Schemas (Virginia Valian)
  - expectations about an individual based on a group
  - can be useful in some contexts
  - also can be very wrong!

**Same** height.
He “seems” taller.



# Combating unconscious bias


- Changing implicit associations takes time…
  - shaped by years of culture & experience
- … but changing actions is “easy”
  - seek experiences counter to bias (prophylactic)
  - consciously compensate for the bias (real-time)
    - full attention to task
    - criteria in advance

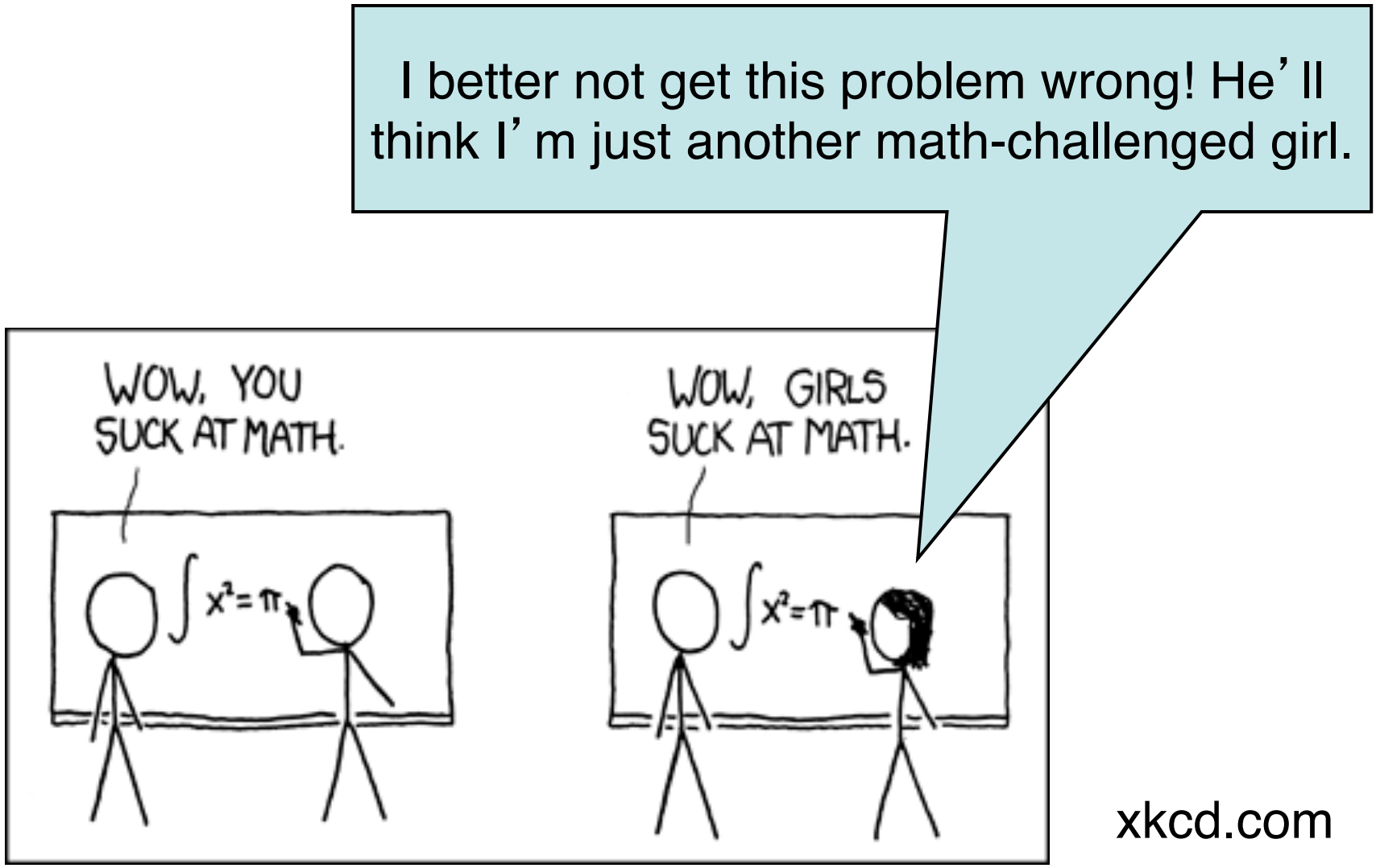
# Unconscious bias in the classroom: example

- Asian students treated as “model minority”
  - aggregate success despite discrimination
  - divisive: ignores history, sub-populations
  - skewed expectations of individuals
- Impact on students of Asian heritage
  - stronger students may be taken for granted
  - weaker students may go unnoticed
  - overall: given less opportunity/support to improve
- Solution: check your assumptions

# Part 2… even if you do (treat everyone the same)

# Understanding Stereotype Threat

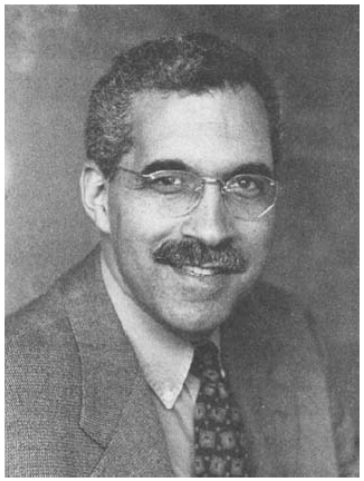
# Stereotype threat in short




xkcd.com

# What is stereotype threat (ST)?

- Under-performance in anticipation of being judged according to a negative stereotype
  - anxiety + regulation divert cognitive resources
- Activated by circumstance
  - context in which stereotype may apply
  - working at edge of one's knowledge/skills
- Academically *strongest* students most affected
  - who identify with the domain (e.g., science)
  - who are generally confident about their abilities
  - who care about not "confirming" stereotypes

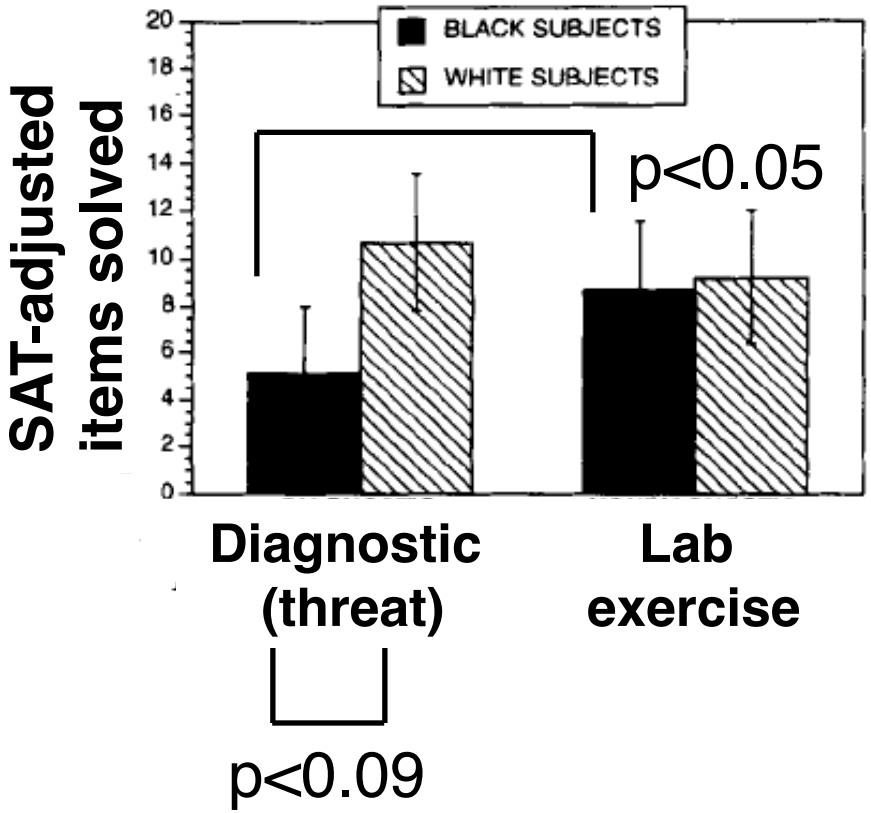


Claude M. Steel
*L.A. Cicerco, Stanford News Service ©*

- Work of Claude M. Steele, others (>100 studies*)

*Paul Sackett and others are skeptical of 'real-world' relevance

# Reducing stereotype threat (ST) improves student performance




- GRE verbal exam
- High-achieving cohort
- Black student scores significantly increased to equal White student scores when threat gone

C. Steele & J. Aronson *J Pers Soc Psy* **69**:797-811 (1995).

# ST can affect ***anyone***

- Most obviously (and disproportionately) affects historically marginalized groups
- But context matters
  - any difference from the "in-group"
- Example: weakened performance of math-identified White males primed to think about success of their Asian-/American peers

# Consequences of ST

- Short-term: under-performance
- Long-term: stop trying
  - have to *repeatedly* prove oneself
  - may avoid risking failure, judgment
  - thus avoid learning opportunities!
  - "disidentify" from domain


(shamelessly stolen from the Internet)

# Developing a personal understanding of ST

*Within your group, discuss a time that you made a conscious effort to avoid "confirming" a negative stereotype.*

*Did anything trigger your feeling of threat – e.g., someone making a comment – or was it an automatic response?*

# Part 3… best practices

# Breaking Down Barriers to Learning

# Reducing ST: wise criticism (WC)

- Two parts to WC strategy for motivating students
- Explicitly say
  - that you are using high standards
  - that you believe they can meet those standards
- Cannot be cursory: “Nice job. Now here’s all the stuff that’s wrong with what you did…”

Mentioning --

1. High standards **+** 2. Demonstrated potential

-- Motivates

# Perils of other approaches

**Key:** You Do Student Hears

1. Ignoring

   *She just doesn't care. I guess I am a lost cause.*

2. Over-praising/under-challenging

   *I guess this is good enough. She doesn't think I can do any better.*

3. Criticism w/out context

   *I'll never get it right!* OR *I'm doing fine, but she just doesn't like me.*
   (Also: miss forest for trees.)

# Wise criticism example

Student gave a scripted oral presentation followed by a thoughtful Q&A, and overall lacked confidence.

*You did* such *a great job [in Q&A]. I was surprised by how good and natural an extemporaneous speaker you are, because you spent the entire talk reading from your slides and notes! This approach was really a loss and misuse of your talents, and I hope next time you will trust yourself to speak "off script" more. I appreciate also your honesty about which parts of the paper you didn't understand, or thought you didn't – in fact, you did a great job explaining [them].*

# Not-so wise versions

- *Great Q&A, but please improve talk next time.*
  - vague
- *You'll have to stop sounding so uncertain if you want to be taken seriously.*
  - cold/demotivating
- *This was way better than I expected going in. Keep up the good work!*
  - damning with faint praise, under-challenging

# Wise criticism exercise 1

*Imagine that you have a student who did well on homework assignments and answered questions in recitation but bombed the first exam. What might wise and not-so-wise criticism sound like?*

# Wise criticism exercise 2

*How about a student who has been consistently struggling with the work? How might you approach him or her when you're not sure s/he is prepared to meet the highest standards?*

# Wise criticism exercise 3

*A student in your recitation has failed the first two exams, and hasn't even bothered to come pick them up.* Why *might she behaving this way?* How *might you respond?*

# Reducing ST: model resilience

- Be candid about your own past struggles → successes as part of a learning *process*
- Discuss (don't downplay) own recitation errors
- Normalize asking for help
  - casually mention questions that "were asked in OH"
- Intra- and cross-group sharing both important

# Reducing ST: promote sense of community and belonging

- Reinforce student identities as (apprentice) biological engineers
  - emphasize professional development
  - deemphasize grades (AMuchAP)
- Use inclusive language
  - avoid always saying “he” as the default human
  - diversify examples of scientists when possible
  - diversify analogies

# On teaching non-native speakers

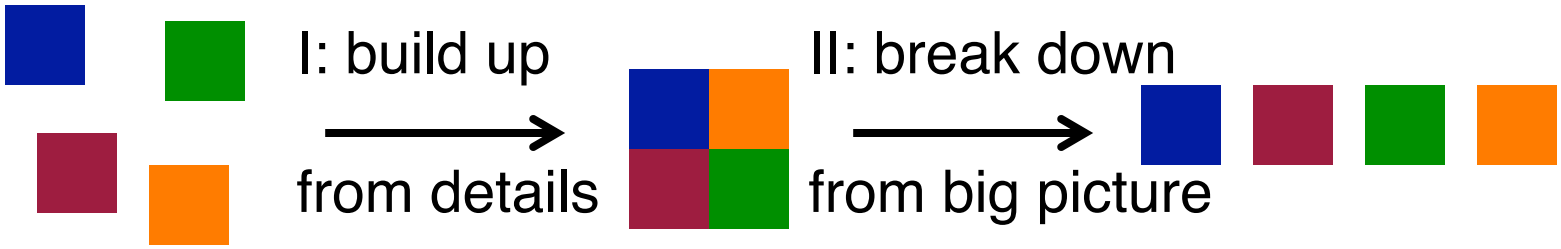
- Contextualize any US-centric examples
- Engage explicitly
  - do you think this a language or a technical issue?
  - becomes a problem you are solving *together*
  - shows confidence in student's perceptions
- Seek outside expertise
  - http://web.mit.edu/fll/www/languages/ELS.shtml

# On *being* a non-native speaker

- Choose your best media
  - okay to ask for written questions from students!
  - images are universal
- Actively acknowledge and bridge the gap
  - get-to-know-you exercise on 1st day
  - informal chats before/after recitation
  - seek student and peer allies for honest feedback
- NB: "muddy cards" are a best practice for *all*

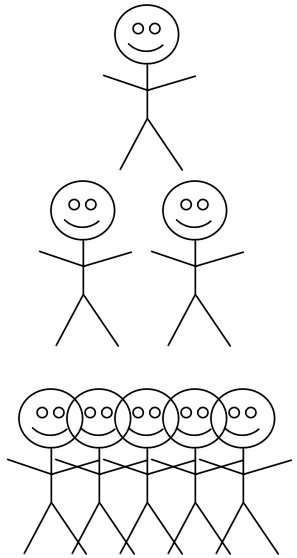
# On differences in learning styles

- Different perceptual, conceptual, emotional styles
- Whole versus parts/details
- Abstract/theory vs. tangible/experiment
- Reflective vs. active
  - e.g., comfort with thinking out loud (hi, extroverts!)
- Emotional styles: response to criticism
- Relevance of cultural and language background



# Specific teaching techniques

- Muddy cards
  - distribute index cards at end of class
  - each students writes comment/question about “muddiest” part of day
  - you prepare thoughtful responses
- Think, pair, share
  - student thinks/writes ideas about solving a problem alone
  - discusses with a partner or two
  - only then ask the whole class for ideas

# Accommodating different learners

- No *one* best way to teach or learn!
- To reach diverse learners, vary your approach
  - visual support
  - hands-on and real-life examples

  } these 2 benefit almost everyone

  - time to think
  - collaboration w/peers
  - interaction w/you (e.g., Socratic)
- Getting back to a student later is okay
  - with alternative, clearer explanation
  - with answer to a question you didn't know

# Parting thoughts about diversity

Students who believe in the immutability of intelligence focus on "performance goals"; they seek to demonstrate rather than enhance their competence and are apt to withdraw from tasks where they risk failure. -from G.L. Cohen, C.M Steele, L.D. Ross, *Pers Soc Psychol Bull* **25**:1302 (1999).

NOT a zero sum game. Many strategies we discussed here improve *everyone's* learning.

# Speaking of modeling resilience…

- Rough evals this spring
  - "overdoing" Socratic method
- Did *I* change?
- Did *students* change?
- Bottom line: they did not feel supported
  - teaching must be *responsive* to specific individuals
  - but, don't take negative comments as a *complete* description of your teaching
- Important to learn from negative experiences
  - my plan: maintain standards (students learning vs. being told answers) while increasing *follow-up* support

# Acknowledgements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- Thanks to my husband and a fine educator in his own right, Wally Holland, for comments on an early draft of this talk.

# Resources (see also slide notes)

- Implicit bias overview: https://implicit.harvard.edu/implicit/
- Implicit bias examples
  - Orchestras: C. Goldin and C. Rouse, *Am Econ Rev* **90**:715-741 (2000).
  - Resumes: M. Bertrand and S. Mullainathan, *Am Econ Rev* , **94**:991-1013 (2004).
  - Swedish fellowships: C. Wenneras and A. Wold, *Nature* **387**:341-343 (1997).
- Gender schema tutorials: http://www.hunter.cuny.edu/gendertutorial/
- Stereotype threat overviews
  - Popular press summary: *http://www.theatlantic.com/magazine/archive/1999/08/thin-ice-stereotype-threat-and-black-college-students/4663/*
  - New one-stop site: http://www.reducingstereotypethreat.org
- Wise schooling
  - Overview: C.M. Steele, *Am Psychol* **52**:613-629 (1997).
  - Mentoring : G.L. Cohen et al., *Pers Soc Psychol Bull* **25**:1302 (1999).
  - Calculus seminar approach (independent of Steele's work and quite relevant): U. Treisman *Coll Math J* **23**:362 (1992).
- Learning styles http://education.jhu.edu/PD/newhorizons/strategies/topics/Learning%20Styles/diversity.html (not peer-reviewed but includes some refs)