

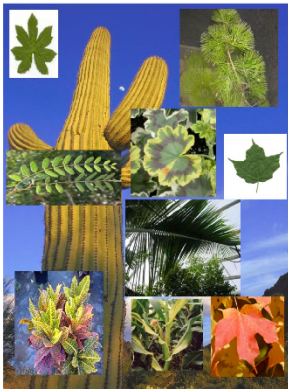
Effective teaching in diverse classrooms

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Introduce self...

Why think about diversity?

- Diverse experiences, values, and learning styles mean that teaching is not one-size-fits-all
- Diversity can promote team innovation... but also conflict
- You can improve individual performance and create a collaborative environment



Public domain image,
Wikimedia Commons.

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Public domain image,
Wikimedia Commons.

Diversity important to teachers → impacts classroom strategies.

As for the importance of accommodating diversity and creating an inclusive environment...

Innovative/robust solutions... and/or profound disagreements/instability.

Classroom: individual impact, but can also **foster or inhibit** a collaborative and welcoming environment.

Transfers to tomorrow's workforce.

Big picture → specific goals

Goals for today's session

- Increase awareness of obstacles to learning
 - in ourselves and in our students
 - that especially affect marginalized groups
- Discuss compensatory strategies
- Ground rules for discussion:
 - be honest but diplomatic
 - avoid judging or accusing each other
 - shared personal experiences stay in this room
 - in summary: both act in and assume good faith

Two types of barriers to learning...

By marginalized groups I mean...

Foundation in theory and practice → discussion

Because mere mention of words such as “diversity” and “race” can provoke defensiveness and anxiety...

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

Part 1... maybe you don't

Part 2... even if you do

Session structure comes from something I've even heard many – including faculty members here – say...

**Part 1... maybe you don't
(treat everyone the same)**

**Understanding
Unconscious Bias**

Tough but true: own biases can negatively impact student learning.

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



Author: Project Implicit
Reuse: Free Art License.
<http://artlibre.org/licence/lal/en>

There is an online test...

Is it bias or just awareness of a discriminatory cultural association “in the air”?

Well, we can make inferences from...

Supplementary note from Project Implicit: “If you implicitly associate GOOD with Asian faces more than Hispanic faces, then you should be able to categorize Asian faces with GOOD faster than Hispanic faces with GOOD. So, the difference in time is a measure of how these groups are associated in our memory, regardless of whether we consciously agree with the association.”

Bias linked with discrimination and performance gaps

- Female orchestra membership ↑ w/anonymity
- Job candidate bias (likely much is implicit)
 - send *identical* resumes except name
 - male name called in more than female
 - typically White name called more than Black
- Swedish research fellowship bias
 - women require 2.5x paper productivity to be judged equal to a man (accounting for journal tier)
- Internationally, implicit bias score correlated with stereotypical performance gaps

... real-life examples showing the impact of implicit (and possibly also explicit) bias.

25% of the orchestra increase explained by audition format

15 vs. 10 resumes

~1 stdev increase in stereotyping predicted ~0.7 stdev advantage for male over female students on science exam.

So we might like to mitigate these effects...

Supplementary note: There is also some research directly correlating implicit bias test scores with individual discriminatory behaviors (self-reports of racial harassment and responses to hypothetical situations, Rudman and Ashmore).

Combating unconscious bias

- Bias test: not an accusation or an inevitability
- Changing implicit associations takes time...
 - a product of culture and personal experience
- ... but changing actions is “easy”
 - cultivate experiences counter to your bias
 - consciously compensate for the bias
- Awareness is the first step to changing behavior and ultimately implicit attitudes

Good news: we can. May get hung up on test “scores”: remember correlation b/w implicit bias and discrimination is a **statistical association and not a personal accusation**. Association/preference due to simple familiarity plays role. Moreover, bias is not fixed...

My example → right after reading positive article...

This may all seem pretty abstract so far. How does it relate to the classroom?

Supplementary note from Project Implicit site: “One solution is to seek experiences that could undo or reverse the patterns of experience that could have created the unwanted preference. This could mean reading and seeing material that opposes the implicit preference. It could mean interacting with people that provide experiences that can counter your preference. A more practical alternative may be to remain alert to the existence of the undesired preference, recognizing that it may intrude in unwanted fashion into your judgments and actions. Additionally, you may decide to embark on consciously planned actions that can compensate for known unconscious preferences and beliefs. This may involve acts in ways that you may not naturally act – for example, smiling at people who are elderly if you know you have a implicit preference for the young. Identifying effective mechanisms for managing and changing unwanted automatic preferences is an active research question in psychological science. The good news is that automatic preferences, automatic as they are, are also malleable.”

Unconscious bias in the classroom: example

- Asian students treated as “model minority”
- Impact on struggling student of Asian descent
 - low homework scores ignored
 - greeted by surprise if s/he comes for help
 - furthers cycle of feeling marginalized
 - overall: given less opportunity/support to improve
- Solution: self-check your assumptions

You may have heard the term “model minority”... pits groups (with different histories) against each other and also affects those w/“model” status: unreasonable expectations.

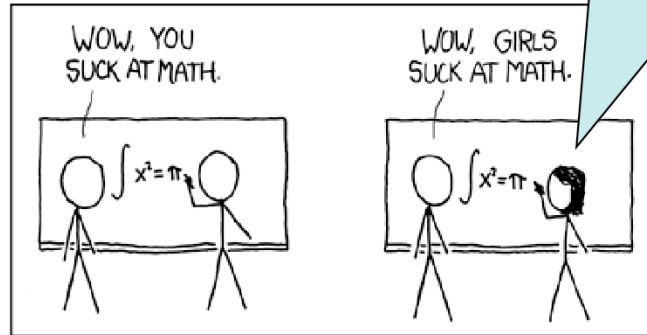
**Part 2... even if you do
(treat everyone the same)**

**Understanding
Stereotype Threat**

With all that said... even if your actions could always be the same, your students will experience them differently.

Stereotype threat in short

I better not get this problem wrong! He'll think I'm just another math-challenged girl.

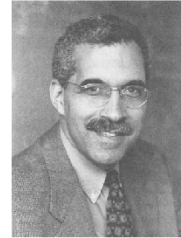


xkcd.com

The most concise and incisive depiction... in a word, think of it as “choking”

What is stereotype threat (ST)?

- Under-performance in anticipation of being judged according to a negative stereotype
 - anxiety diverts 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. Steele
*L.A. Cicero,
Stanford News
Service ©*

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

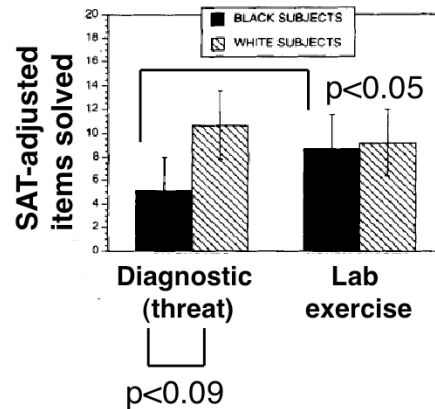
*Paul Sackett and others are skeptical of 'real-world' relevance

ST in more academic terms and in greater detail...

Pressure/anxiety → blood flow from centers of intellect to fight-or-flight amygdala...

For strong students, **NOT just generalized self-doubt or stereotype internalization trigger, BUT fear of judgment and subsequent unfair treatment** according to stereotype, (e.g., F/M did poorly on an exam – inherent limitation versus bad day).

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).

One of the first examples of ST research was done over 15 years ago...

Chose particularly difficult problems to bring about the threat, students working at edge of their abilities.

Normalized by incoming SAT scores.

Lab exercise “to see how certain problems are generally solved” vs test of intelligence

Consequences of ST

- Short-term: under-performance
- Long-term: stop trying
 - have to prove oneself at each new level
 - may avoid risking failure and judgment
 - thus avoid learning!
 - “disidentify” from domain as source of identity and self-esteem

Short-term “just” dings performance. But long-term...

Key is faltering at the edge of one’s ability, which is how we learn.

Long-term demotivation, “disidentification” (C. Steele) from that domain as source of self-esteem.

But initially it’s about trying “too hard” versus not hard enough.

So how do we reduce ST effects?

ST can affect *anyone*

- Most obviously (and disproportionately) affects historically marginalized groups
- But context matters
- Any difference from the “in-group”
 - older person playing a memory game
 - smallest kid in a sport
 - engineer in a Harvard humanities class

Since then, many other examples... including white men primed to feel inferior in math (compared to Asian students). So it turns out **day-to-day stigma not required for threat activation** → circumstance matters, not just an internalized inferiority complex. Interestingly, middle-identified improved under the stimulation of this competitive feeling, while highly-identified men choked. Fine line b/w motivation to do your best and distraction from doing so...

Similarly, some of you may feel anxious about TA role. Do: **collaboration + get explicit feedback**.

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?

Just to internalize the idea, let's all think about...

My example: as F, prepared for gotcha moments re: subtle details that I am purposefully oversimplifying in class (CI).

So... didn't have to *actually* be unfairly judged by *anyone* to experience anxiety. And ST occurs whether the test/instructor is biased or not. So don't take personally → be supportive.

Now that we all understand ST, I want to talk about how to mitigate it...

Reducing ST: wise criticism

- Telling students that you are using high standards AND that you believe they can meet those standards is *highly* motivating
- Perils of criticism with no context
 - student mistrust
 - disengagement from the task
 - misplaced efforts
- Perils of over-praising or under-challenging
 - same as above but in slightly different form
 - student underachievement, discouraging future effort

Key way is something Steele calls “wise” criticism... (relevant research is in my reference list, but also intuitive)

What are other types of criticism and why are they problematic? (1) No feedback at all: can assume the worst. (2) Mistrust, “attributional ambiguity” (Jennifer Crocker and Brenda Major) – e.g., due to racial bias or high standards? Also may focus on perfecting details and missing the big picture. (3) Similarly, missed opportunity to improve. **Overall, students *want* to be challenged but also to be supported in showing themselves capable of meeting those challenges.**

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].

Example from my class. What do you think, and what might be not-so-wise responses?

Summary: **wise criticism is not just personal, but targeted and actionable.**

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 exercises

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?

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

Reinforce: must mention your **belief that they *personally* can improve with more effort, not vague (whether praise or criticism)**. Only if you mean it! If not, consider why not. Where have they demonstrated competence so far?

Reducing ST: model resilience

- Be candid about your own past struggles as part of a learning *process*
- Explore, don't downplay recitation errors: "let's talk about why this mistake is easy to make..."
- Normalize asking for help
 - casually mention "several people asked about this in OH" to decrease anxiety/stigma about attending
 - make problem-solving process and assumptions explicit, build in space for questions by default
- Intra- and cross-group sharing both important

Can also model certain behaviors explicitly...

My anecdote example: 5.12 my first semester here...

Finally... **Modeling intra-group demonstrates achievement in MIT/BE environment possible; cross-group shows that struggles are common rather than a feature of one's social identity and presumed abilities.**

Reducing ST: promote sense of community and belonging

- Reinforce student identities as (apprentice) biological engineers
 - emphasize professional development, not grades
 - draw out excitement, not anxiety
- Use inclusive language
 - avoid always saying “he” as the default human
 - diversify examples of scientists when possible
 - diversify conceptual analogies (e.g. not always sports)
 - contextualize analogies and references to pop culture

Link b/w professional development and process-focus

Differences in learning styles

- Perceptual styles and perceptual needs:
 - tangible versus abstract (theory/experiment)
 - whole versus parts (big picture/details)
- Conceptual styles:
 - synthetic versus divergent
 - reflective versus active processing (e.g., comfort with thinking out loud)
- Emotional styles: response to criticism
- Relevance of cultural and language background
 - e.g., oral vs. written vs. pictorial processing

Different stages of learning. Variation as early as perception stage.... Then need to conceive/integrate knowledge...

Top-down/bottom-up

Some cultures more encouragement to be verbal. (Internationally, even different parts of country, etc.)

Non-native speakers especially helped by **multimodal (pics) and reference (written) support.**

Accommodating different learners

- No *one* best way to teach or learn!
- To reach diverse learners, vary your approach
 - visual support benefits almost *everyone*
 - ditto for hands-on and real-life examples
 - interaction w/you (Socratic)
 - collaboration w/peers (discuss w/partners → class)
 - time to think (try problem alone → whole class)
- If something isn't working, don't just repeat it
 - have more than one way to explain something...
 - ... getting back to the student later is okay
 - ask questions to hone in on key conceptual difficulty

Small groups → whole class gives **extra time both to those who just aren't as intellectually nimble and to those who hesitate due to taxed cognitive resources/anxiety**. Eventually participation becomes second nature.

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.

I leave you with a quote... describes many Type A, high-achieving students.
Best practices can impact EVERYONE. Both individual and group effects →
dynamic, welcoming learning environment.

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<http://education.jhu.edu/PD/newhorizons/strategies/topics/Learning%20Styles/diversity.html> (not peer-reviewed but includes some refs)

Strongly recommend the Treisman seminar as a complementary view to Steele's with some overlap