

But I Don't Like Beer:

A Guide to Identifying and Reducing Stereotype Threat to Maximize Student Performance

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(1) Introduction

Discussions of stereotypes and diversity often focus narrowly on race and gender and have the potential to seem accusatory. Although gender-based and race-based prejudices are cause for deep concern, and may be among the most overt of personal prejudices, the title of this article eludes to the fuller spectrum of stereotypes embedded in everyday social interactions. Stereotypes result from the way we have been socialized— or programmed— by our families, friends, and the media to think about groups of people, including those groups to which we belong. ¹⁻³ For example, if science graduate students traditionally celebrate, commiserate and generally connect with classmates or lab mates over beers, how might that unintentionally alienate those who do not drink alcohol because of personal preference or because of religious or medical reasons? Are we unintentionally sending a subtle message about who belongs and who might not by presuming to know what “we” all enjoy?

Although stereotypes are a sensitive topic, not talking about how they affect the classroom environment, teacher-student interactions and the learning process can be damaging. Mere mention of the words “stereotype” and “diversity” can induce anxiety in even the most open-minded person.⁴ This reaction is natural. In fact, multiple independent studies suggest that the people who care most deeply about diminishing stereotypes and enhancing diversity are more uneasy discussing these issues than people who care little about changing the status quo.^{4,5} This discomfort can result from lacking the proper tools with which to identify and address personal prejudices and institutional or systemic biases. This training will provide some of those tools.

Today’s classrooms are heterogeneous— even in ways that are not readily apparent.⁶ Students not only bring previously gained scientific knowledge with them into the classroom, they also bring preconceptions about how they and others will be treated based on their culture, sexual orientation, gender, race, educational background, and class among other things. Discussing stereotypes now will help us to manage our diverse classroom environments by creating a space in which everyone feels valued and respected.

Our two-part goal in this training session is the following:

- 1) To help you understand and identify “stereotype threat” and the various ways it can undermine student performance in the classroom, and
- 2) To equip you with strategies to eliminate the threat and thereby maximize each student’s performance in your classroom.

Throughout this guide, we will pose a series of questions to facilitate discussion and move us toward our goal.

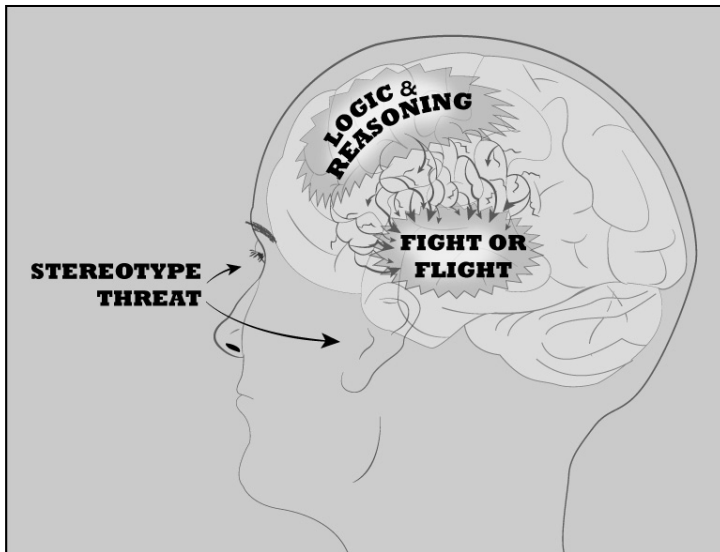
Exercise: Can you recall a time where you or someone you know felt judged by a superficial characteristic? For example, can you remember a time when someone spoke to you in a condescending tone because they thought you looked younger than your age?

(2) What is “stereotype threat” and how does it affect students?

Stereotype threat is the perceived risk of confirming a negative stereotype. ^{4,7-9} This potentially debilitating fear of proving a false stereotype true (i.e. the presumption that women are not as good as men at quantitative reasoning), or being unfairly judged based on the stereotype, distracts and discourages students. This type of fear can result in a poor performance, which feeds both the false stereotype and the student’s insecurities. ⁴

Stated in a different way, stereotype threat is the following: “The stereotype says that I’ll do poorly in (*insert some particular event or field here e.g. ‘calculus’*) because I’m (*insert identity here e.g. ‘a woman’*). So, I hope I don’t do poorly.” The tragedy behind this way of thinking, stereotype threat, is that efforts to disprove a stereotype detract mental faculties from the task at hand, which results in personal *underperformance* and often confirmation of the stereotype.

The renowned Columbia University social psychologist Dr. Claude Steele— the father of the “stereotype threat” concept— has outlined the various effects of stereotype threat in his most recent text, *Whistling Vivaldi and Other Clues to How Stereotypes Affect Us* (2010).



Dr. Steele discovered in experimental trials that when individuals are performing under stereotype threat, the blood flow in their brains (an indicator of brain activity) shifts from the prefrontal cortex, the area of the brain responsible for logic and reasoning, to the amygdala, the region of the brain that becomes activated when we are under attack or distress.

Dr. Steele has demonstrated that it is possible to induce stereotype threat in groups of women and Members of Underrepresented Racial Populations (MURP) who care deeply about disproving math-related academic stereotypes. During a quantitative reasoning exercise, Dr. Steele and his team either reminded the women of their gender before the test by having the students complete a questionnaire asking them

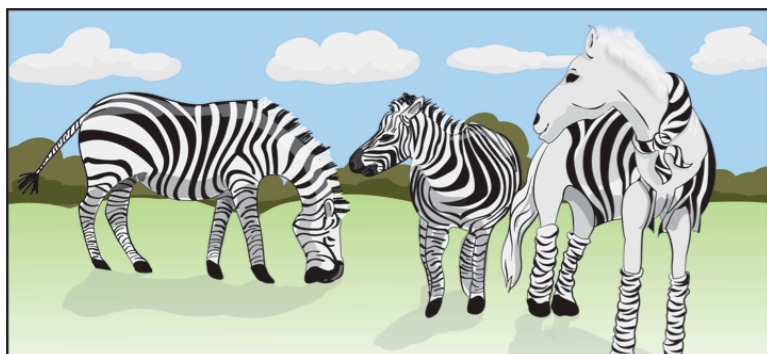
about their gender *or* (and this is crucial to note) *did not mention their gender at all*. For the race experiment, Dr. Steele and his team either reminded the students of their race by having the students complete a questionnaire about their race *or did not mention race* at all before the exam. In both test groups, the students *underperformed* when compared to the control group of white male subjects.

To determine if stereotype threat can be eliminated, Dr. Steele and his team administered an *identical* test to another set of female and MURP students with levels of academic achievement near identical to the first group of test subjects (all subjects in both groups were Stanford University undergraduate admits identified as having ‘superb’ quantitative skill based on SAT scores and calculus grades). To this set of women and MURP, however, he assured the students that the test contained no gender or racial biases. **After being assured that the exam was free of bias, the women and MURP performed equally to the control group.** Reassuring words effectively eliminated stereotype threat and allowed women and MURP to maximize performance to the point of achieving parity with a group (white males) historically overrepresented in and often regarded as the vanguard of the academy. For the educator, then, reassuring words *or the lack of them* are powerful tools that can directly impact student performance—for better or for worse.

Stereotypes can be positive as well. ^{3,4,10,11} The referenced works highlight the concept of “privilege”, which is a term to describe how certain groups actually *benefit* from being stereotyped. For example, the presumption that Asian students are good at math often dissuades instructors from doubting an Asian student’s quantitative ability unless the student proves otherwise. Additionally, since students are not threatened with confirming a negative stereotype, their minds can remain focused on the task at hand, which can *augment* the performance of modest students.

Unless we challenge our preconceived notions—stereotypes—whether positive or negative, and recognize that our students may be adversely affected by stereotype threat, whether or not we harbor the personal prejudices in question, we will fail to create an inclusive environment where all students feel valued and empowered to perform optimally.

Exercise: The title of Steele’s latest work “Whistling Vivaldi and Other Clues to How Stereotypes Affect Us” comes from a story he heard of a young African-American man who whistled music from the classical musician Vivaldi

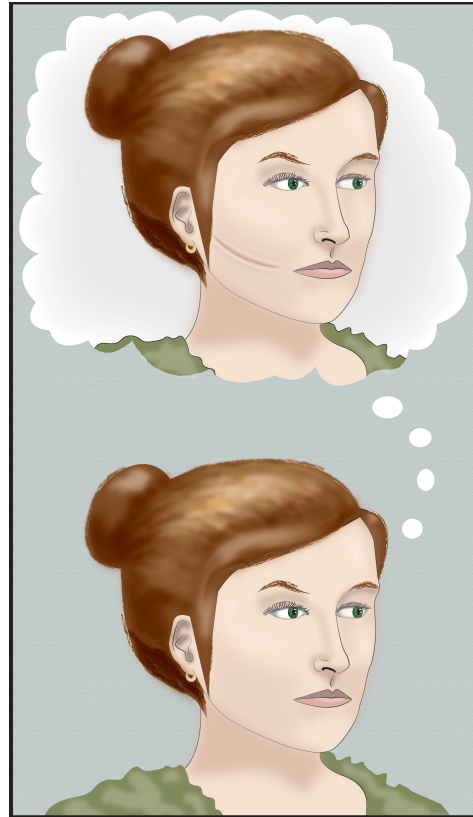


as he was walked down the streets of Chicago. This whistling, the young man thought, would disarm the tensions of the elderly people he thought were afraid of him and

harbored negative stereotypes about him. Steele asserts that we all “whistle Vivaldi” from time to time. Can you think of any time where you have “whistled Vivaldi”? For example, one deeply spiritual student at MIT decided that in public spaces on campus, he would not close his eyes and bow his head to pray before meals.

(3) Who can be affected by stereotype threat?

Anyone who feels that he or she has a noticeable difference in a given situation is susceptible to stereotype threat. Even if that difference is temporary or minor, or *even if it does not really exist*, it can change how an individual believes he or she is perceived by others⁷. Data in support of this idea comes from a classic experiment by Kleck and Strenta in which subjects had a disfiguring facial scar applied cosmetically, which the participants then viewed in a mirror¹⁴. The participants were then asked to interact with fellow students. Subjects overwhelmingly reported that the other students were uncomfortable and condescending in their interactions, and the subjects attributed this to their facial scars. However, unbeknownst to the subjects, a makeup artist had wiped off the scar during a “touch up” prior to the student interaction. The perceived prejudice was not a result of the scar. Furthermore, objective evaluators observing the interactions determined that there was no difference in the body language or treatment toward subjects who thought they had a facial scar versus a control group that never had a scar at all¹⁴.



Think about what this study suggests in terms of your own students. Some of your students will be primed to interpret your tone, silence, or body language as negative. Students under stereotype threat will be looking for signs of prejudice, and this study suggests that when one looks, one finds (even if it is not really there).

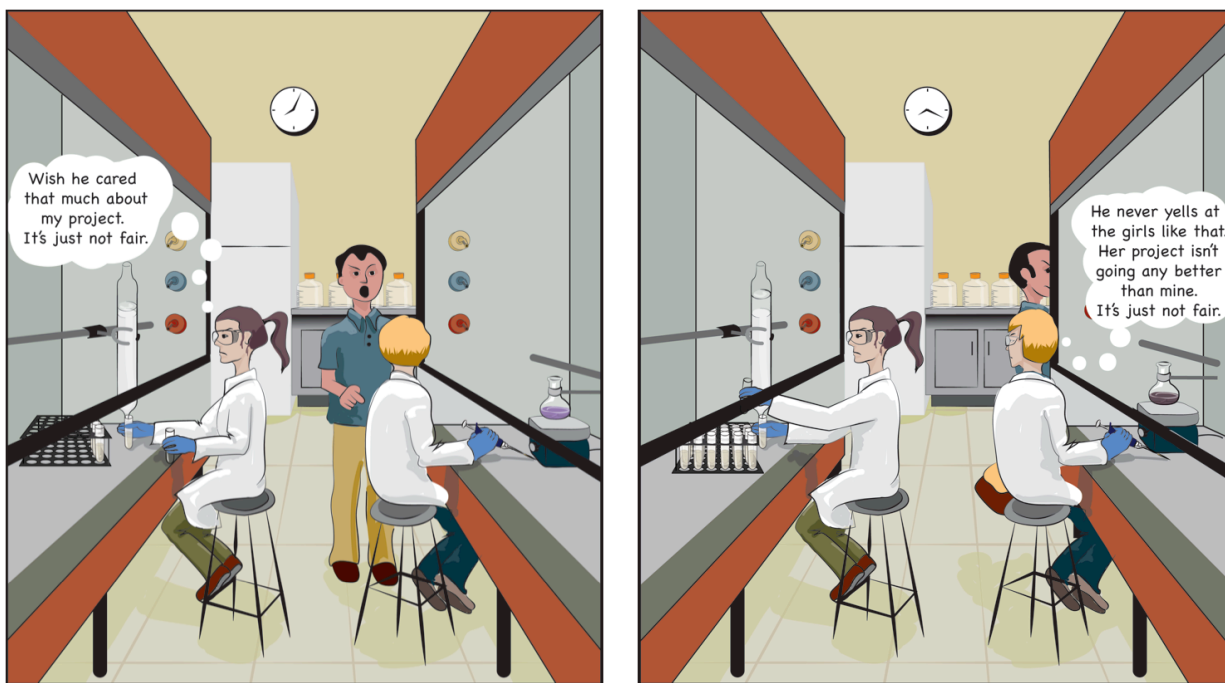
Exercise: Can you think of time when you felt you were being judged or treated unfairly only to later discover that this was not the case? For example, an MIT professor shared that as a new faculty member she met with a prominent older male scientist who seemed to have no interest in her research and only asked her questions about her personal experiences at MIT. She perceived his questions as condescending and concluded that he didn't respect her as a scientist because she was young and female. However, she later found out that he was asking about personal issues because he had a son about to start a faculty position, and he was concerned about the current difficulties, since it had been so long ago that he himself was starting out.

What are some types of stereotype threat that affect MIT students?

It is tempting to believe that people at MIT are too strong academically to be affected by stereotypes or to buy into them. However, recall that stereotype threat affects the students who care *most* about disproving negative stereotypes; these students are generally the strongest academically.⁴ Thus, MIT is the perfect incubator for stereotype threat. The following comments reflect stereotypes that undergraduates, graduate students and professors from the Biology and Chemistry Departments at MIT have experienced and shared:

- (1) "MIT students are supposed to be really smart, so asking a question will only make me sound stupid."
- (2) "Scientists tend to have a drink to unwind and socialize, so If I don't drink alcohol, I will appear anti-social or not 'part of the group.'"
- (3) "White people are less intelligent than Asians; Black people and Latinos are less intelligent than White people—all of the Black people are here because of affirmative action"
- (4) "Women are not as gifted as men in quantitative analysis; men are not as good at communicating as women."
- (5) "Women are more emotional than men; men are more analytical than women."
- (6) "Everyone at MIT is fluent in English, so if I ask a question in class and reveal that English is not my first language or I am not fluent, everyone will think I'm stupid".
- (7) "Scientists care more about their work than about their appearance, so if I'm too particular about my personal hygiene or dress too nicely then people will think I don't care about my work."
- (8) "Asians study the most out of any racial group and do the best in classes here, so if I participate in any student clubs or take a break from my studying, I will do poorly in my classes, and everyone will think that I'm lazy and don't deserve to be at MIT."
- (9) "TAs are too young and do not know that much about biology, so they can't help me. I would rather talk to the professors."

Exercise: Can you add to this list? Can you think of any other stereotypes that may arise while teaching in the classroom or any other time during your own graduate education? What types of unintended damage might these stereotypes cause? For example, consider stereotype (5): Several male professors participating in this training have said that they consciously try to avoid being harsh or overly critical to the women in their male-dominated labs, even if that means saying nothing about their progress. Consider the unintended damage: female graduate students in certain labs have complained that their male advisor never gives them any feedback. Male students have complained that their advisor only "yells at the guys."

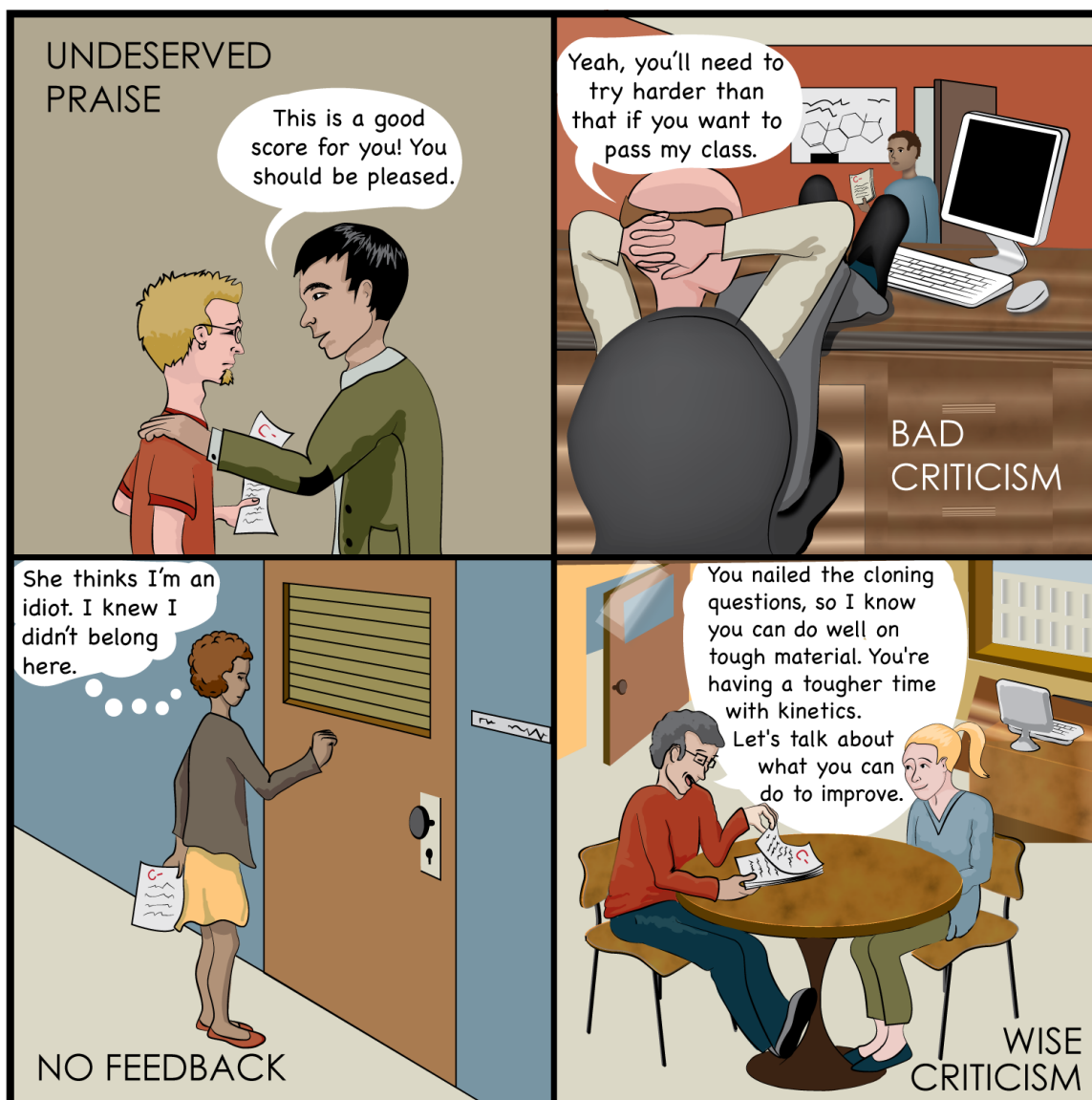


(4) Ways to mitigate stereotype threat and maximize student performance?

(A) Give wise criticism.

Consider this: Which response would you rather hear after an instructor has graded your exam and you realize you scored a low grade?

- (i) Jamie you have some real issues with kinetics questions. I suggest you learn how to interpret a Lineweaver–Burke plot before the next problem set is due or at least before we have our next test. Otherwise, you likely won't pass the class.
- (ii) Jamie, this is a *good* score for you! I'm impressed!
- (iii) Jamie, based on your previous work, I know you have the potential to do really well in this class. I see on this test that you had significant difficulty with the kinetics questions. Many other people had trouble on kinetics this time around too. I would be happy to help you master this before the next homework assignment is due so you can do really well in the class. My office hours are tomorrow night. Please stop by.



Response (i) is caustic. This response can be particularly damaging to a student already worried that he or she does not belong at MIT. Such a comment can cause certain students to lose any confidence in their ability to succeed in the course or in science in general. Undergraduate biology teachers, especially introductory biology teachers, have a great responsibility as our students are in their formative years as scientists, engineers and intellectuals.

Response (ii) is an example of unwarranted praise and can be just as damaging as response (i). “Positive feedback can cause further harm to the extent that it communicates low expectations for future achievement. Praise for substandard performance, or for easy work, can send the message that little more is expected from the student.” (page 316) ⁷

Response (iii) shows the student that you are invested in his or her success in the course. Response (iii) also acknowledges an adequate level of achievement in other areas of the course and the potential to increase the knowledge level in a troubled area.

It is important to respect the intellectual capacity of a student experiencing stereotype threat.^{4,7} Your students (and people in general) are more likely to listen to your critiques if they believe that you really value them and want them to do well. Wise criticism—criticism in which you **explicitly tell the student that you think they are capable of attaining a high level of success and achievement**—helps students feel less defensive and less threatened. Essentially, wise criticism dissolves any “barrier of mistrust” behind which students think they have to fend off stereotypes.^{4,7}

Exercise: Share an example of when someone gave you “unwise” criticism; think of a way to give that same criticism in a “wise” way.

(B) Change the narrative.

Particularly for typically high-achieving students (all MIT undergraduates were high-achieving high school students) who do poorly on an assignment or an exam, it is important to reassure them that everyone has difficulty at some point in their college career. Essentially, this serves as a *counter-narrative* to the stories they are telling themselves about how no one else who is successful has ever struggled to perform well.^{4,12} It can be particularly meaningful if you, as the graduate student TA, tell them about a time when you struggled or felt inadequate, but then were able to reach a high level of achievement again. It could also be meaningful, and highly impactful, if you, as the TA, remind the student that teaching and learning are about communicating, and that a failure to understand a concept may be nothing more than a communication problem. We have all had the experience where a teacher’s explanation made us more confused than ever. It is one of our responsibilities as teachers to seek alternative ways to explain difficult material, and it is the student’s job to help the teacher identify points of confusion.

In Dr. Steele’s latest text, he cites a fascinating longitudinal study. Members of underrepresented racial populations (MURP) were divided into two groups: (1) first year undergraduate students who elected to attend a seminar about the challenges virtually every Stanford student faces in college courses and (2) first year students who elected *not* to attend the same seminar. Incoming undergraduate students in Group 1, those who elected to attend the seminar, ended their first year with cumulative grade point averages one-third of a letter grade higher than other MURP who did not attend the same seminar.⁴ Steele posits that the advanced undergraduate students (seniors) were able to change the narrative of the MURP who attended the seminar. Essentially, the advanced undergraduates showed the MURP who attended the seminar that struggling

and needing to ask a question for clarification did not reflect poorly upon the students, their race or their perceived inability to understand the material. Stereotype threat had been lifted.

Exercise: Recall a moment when a mentor shared a story with you about a time when he or she struggled with a concept or felt inadequate, but then reached a high level of achievement.

(C) Change the cues your students receive.

From a wider historical perspective, women and MURP (among other underrepresented groups in the sciences) in the US have been severely marginalized in the academy and by our larger society.^{3,12} Many women and MURP cite “glass ceilings,” or institutionalized limits on their ability to achieve. Several methods for fighting against the weight of systemic sexism and racism and other “-isms” are elaborated in this section and the following section.

Introductory science texts cite a remarkably monotonous group of people, often painted as icons, who make valuable contributions to science. One way to change the cues your students see in their daily experience is to cite examples of significant contributions that women, MURP, and members of other underrepresented groups have made to the field. Additionally, you could showcase the entire team, comprised of *undergraduate students*, graduate students and post-doctoral scientists, that worked on the contribution. The visual cues students see in their textbooks and in their classes are often regarded as metrics that indicate who can be successful in the field and, tangentially, who is valued and belongs.⁴

Exercise: Remember back to your introductory science courses. Were any pictures of scientists shown in class? What did the scientists in the pictures look like?

(5) Conclusion

Teachers have an awesome and challenging responsibility to convey material effectively to a diverse classroom. This guide is designed to serve as a starting point for identifying and understanding stereotypes that can negatively affect the learning environment in the classroom. Dr. Steele and many others have provided a variety of ways to mitigate stereotypes, promote diversity and maximize student performance. We have outlined a few of the most effective methods here, and focused primarily on relatively more apparent* identities such as race and gender. If you are interested in discovering more about any of the topics we discussed, we encourage that you take a close look at our reference list.

We believe that diversity is the cornerstone of innovation. While we recognize that completely eliminating stereotype threat is a bigger problem than we can solve by ourselves, we do not wish to slight our efforts—or yours. It is our hope that by providing professors and teaching assistants with the proper tools to construct more open and inviting environments for everyone, that our efforts will increase exponentially: Each TA and professor will assist tens to hundreds of undergraduates in becoming the educators, scientists, engineers, businesspersons, politicians, physicians, lawyers and, most of all, contributing members of society. Society will, then, benefit from our students. Your efforts to foster greater diversity and a wider sense of community will make a difference!

*We make special note that one's race, gender and age, as any other identity, are not always apparent. Instead, we make the distinction that one's race, gender and age are *displayed*, and that people make assumptions and cast stereotypes based upon what they see. Other identities, such as socioeconomic class, sexual orientation and religious affiliation, are important components of a person and are subject themselves to stereotypes, yet *tend* to be more encrypted than race, gender and age.

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