# Why Race Matters in Physics Class

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## INTRODUCTION

*The following is an excerpt from the transcript of oral argument in* Fisher v. University of Texas at Austin,[1] *argued before the U.S. Supreme Court on December 9, 2015. Gregory G. Garre represented the University of Texas.*

> Chief Justice Roberts: What—what unique—what unique perspective does a minority student bring to a physics class?
>
> Mr. Garre: Your Honor—
>
> Chief Justice Roberts: You're counting those among the classes in which there are no minority students. And I'm just wondering what the benefits of diversity are in that situation?
>
> Mr. Garre: Your Honor, we can talk about different classes, but—but this Court has—has accepted in *Bakke* and *Grutter*, and I think it accepted again in *Fisher I*, that student body diversity is a compelling interest. Our friends do not ask this Court to rule—overrule any aspect of *Grutter* or of *Fisher* or of *Bakke*—[2]

Does it matter if black and Latino students are in physics classes? The counsel for the University of Texas never responded to this question, and the silence left the impression that a minority student's presence in a classroom confers an educational benefit only by enhancing "diversity discourse."[3] This term refers to the often-made but rarely discussed assumption that students of color bring value to educational settings only when the subject matter is racially or ethnically salient. The open letter to the Supreme Court from the Equity & Inclusion in Physics & Astronomy group comprised of over 2400 physicists and astrophysicists powerfully rebuts the diversity discourse paradigm:

> The rhetorical pretense that including everyone in physics class is somehow irrelevant to the practice of physics ignores the fact that we have learned and discovered all the amazing facts about the universe through working together in a community. The benefits of inclusivity and equity are the same for physics as they are for every other aspect of our world.[4]

In this Essay, I expand upon their argument. The impression created by the colloquy in oral argument is wrong. It misinterprets the Supreme Court's own jurisprudence[5] and ignores contemporary scientific research from cognitive social psychology and neuroscience showing that white students—as well as minority students—benefit in multiple ways from the presence of students of color in physics class.

The Court has repeatedly set forth the educational benefits of diversity: "the lessening of racial isolation and stereotypes"[6] and promoting cross-racial understanding, in addition to robust classroom dialogue. This vision is strongly supported by social science research, which reveals that intergroup interaction is crucial to promoting cross-racial understanding—by decreasing the cognitive phenomena of implicit bias, racial anxiety, and stereotype threat. In addition, racial and ethnic diversity—as well as other kinds of diversity—have been found to act as catalysts for both innovation and for generally more error-free decisionmaking. These benefits all have particular importance in physics classes, as well as other science, technology, engineering, and mathematics (STEM) classes, and even greater significance in STEM fields.

As I explain below in more detail, implicit bias refers to the automatic stereotypes and attitudes we hold about groups of people that are often contrary to our conscious values and beliefs.[7] Racial anxiety is the concern we may have prior to or during an intergroup interaction that our race or ethnicity will undermine the encounter, and stereotype threat is the often unconscious concern we may have during the performance of a demand task—such as a test—that our actions will confirm a negative stereotype about our identity group. These three phenomena—implicit bias, racial anxiety, and stereotype threat—have

1. 135 S. Ct. 2888 (2015) (granting petition for writ of certiorari).
2. Transcript of Oral Argument at 55–56, Fisher v. Univ. of Tex. at Austin, No. 14-981 (U.S. Dec. 9, 2015), http://www.supremecourt.gov/oral_arguments/argument_transcripts/14-981_4h25.pdf.
3. I credit Devon Carbado with the phrase "diversity discourse" to refer to this phenomenont.
4. Equity & Inclusion in Physics & Astronomy Grp., *An Open Letter to SCOTUS From Professional Physicists*, GITHUB, http://eblur.github.io/scotus [http://web.archive.org/web/20160408051826/http://eblur.github.io/scotus/].
5. *See infra* Part II.
6. Fisher v. Univ. of Tex. at Austin (*Fisher I*), 133 S. Ct. 2411, 2418 (2013).
7. *See infra* Part III.

the effect of undermining the educational experience for all students and have significant societal consequences as well.[8]

The legal and cultural conversation about race-conscious admissions often reflects a profound misunderstanding about who experiences the benefits of diversity beyond robust discussion. It is easy to understand that students of all races benefit from discussion of topics in which race is explicitly salient—for example, an English literature class discussing *Huckleberry Finn*, a sociology class considering the work of William Julius Wilson, or an examination of the role of Cesar Chavez in American history.[9] But the premise of Chief Justice Robert's question may be understood as suggesting that diversity that reduces racial isolation and challenges stereotypes confers a benefit only upon the minority students themselves.

The assumption that only students of color benefit from the reduction of racial isolation and challenge to stereotyping may seem commonsensical, but it is wrong. Students of color would benefit in significant and fairly evident ways.[10] Benefits to white students may be less obvious, but they would be just as significant. White students who are taught in racially and ethnically diverse classrooms are less likely to hold implicit racial biases and more likely to have stronger racial navigation skills. These competencies, frankly, give them a competitive advantage in a professional world that increasingly needs people

8. It is precisely because of the unique role that race continues to play in educational institutions as well as society more broadly that reducing race to class is so ill-conceived. For a powerful articulation of this argument, see Devon W. Carbado et al., *The Son of a Black Lawyer and the Coalminer's Daughter: Why Both Should Benefit From Affirmative Action*, 64 UCLA L. REV. DISC. (forthcoming 2016) (discussing the racial challenges faced by higher-income African Americans). William Kidder's piece in this online volume also explains why class-based affirmative action will be an inadequate tool to achieve the benefits of racial diversity. William C. Kidder, *How Workable Are Class-Based and Race-Neutral Alternatives at Leading American Universities?* 64 UCLA L. REV. DISC. (forthcoming 2016).

9. Indeed, the diversity discourse rationale has often been accused of benefiting white students only or primarily. *See, e.g.*, CHARLES R. LAWRENCE III & MARI J. MATSUDA, WE WON'T GO BACK: MAKING THE CASE FOR AFFIRMATIVE ACTION 27 (1997) ("We also recognize that it would help the children of the powerful to learn more about the nonwhite world if a few nonwhites were around, but we will decide whom to invite. We will decide who is qualified to serve our purpose of creating an environment where we can learn what we need to know about them.").

10. For a thorough discussion of the important benefits of increased diversity to students of color, see, for example, Liliana M. Garces & Uma M. Jayakumar, *Dynamic Diversity: Toward a Contextual Understanding of Critical Mass*, 43 EDUC. RESEARCHER 115, 117–21 (2014) (analyzing decades of diversity-related research showing that, for institutions to leverage the benefits of diversity, they must promote a healthy racial climate, provide a welcoming environment for all students, prevent harms due to racial isolation, diminish feelings of tokenism, and promote cross-racial interactions). In this volume, Garces explores the attendant harms of decreasing diversity. *See* Liliana M. Garces, Fisher v. Texas II: *Lessons From Social Science on the Harm of Further Restricting the Consideration of Race in Admissions*, 64 UCLA L. REV. DISC. (forthcoming 2016).



who can work successfully in diverse workplaces. Harboring fewer implicit biases and experiencing less racial anxiety benefits all of us in a more profound way as well. The vast majority of people of all races and ethnicities consider racism immoral. We all want our behavior to align with our values, but implicit bias and racial anxiety often undermine our conscious goals.

Despite powerful evidence supporting the broad benefits of diversity, proponents, along with skeptics such as Chief Justice Roberts, often emphasize only the diversity discourse paradigm when considering race-conscious admissions.[11] Therefore, in addition to describing the social science supporting the broader vision of diversity's educational benefits, I also consider why the discourse paradigm dominates the cultural and legal discussions of race-conscious admissions programs and identify two explanations for this phenomenon.

First, the diversity discourse paradigm is seen as benefiting all students—everyone's educational experience is enhanced by a more robust discussion of *Huckleberry Finn*.[12] On the other hand, reducing racial isolation and stereotypes is often seen as benefiting primarily students of color. Second, the importance of reducing racial isolation and stereotypes, or promoting cross-racial understanding, is not well understood by the general public and so are not highlighted

11. Those who are strong proponents of race-conscious admissions tend to share the general notion that classrooms benefit from racial diversity largely from the "perspectives" they bring to topics involving race or when the topics differ from race stemming from life experiences linked to race. *See, e.g.*, Charles E. Daye et al., *Does Race Matter in Educational Diversity? A Legal and Empirical Analysis*, 13 RUTGERS RACE & L. REV. 75-S, 97-S (2012) ("One can concede that in Biology class neither the anatomy nor the organs of a frog dissected will vary according to whether the dissector is Black or White or whether racially distinct or diverse dissectors of frogs work together or separately. But, one does not relinquish the proposition that if the dissectors work together and have diverse perspectives, they might learn something about each other while dissecting the frog."). Daye and co-authors are thoughtful that diversity is important throughout our educational experiences, but they also emphasize that the value is linked to "perspectives." *Id.* at 97-S to 98-S ("At a deeper level, if a student has never before interacted with a student who has the codissector's personal characteristics, family background, or life experiences, not to mention having never before worked jointly with such a student, the students might both come away from the frog dissecting exercise not only with a new appreciation of frog entrails, but profoundly affected by the experience of working with a person who imparted different perspectives with whom they were never that close to before.").

12. This portrayal allows for the argument that race-conscious admissions do not confer a benefit on the particular student, but rather are for the benefit of the student body and the institution. DERRICK BELL, RACE, RACISM, AND AMERICAN LAW § 5.12.1, at 208 (5th ed. 2004) ("Justice Powell obviated the need for past discrimination by including minority admissions within the broad range of discretion that universities have long exercised in the admissions process to obtain, inter alia, diversity in the admitted student body. Thus, those minorities admitted are not receiving a benefit because of past discrimination, but rather are simply adding to the diversity of their classes.").

even by those who are ostensibly proponents of diversity—such as counsel representing the University of Texas in front of the U.S. Supreme Court.

Research from within social science rebuts both explanations and provides us with evidence, language, and sophisticated measures to assess and understand the classroom-wide effects of stereotypes and racial isolation[13]—we need only make use of these tools.

This Essay proceeds in three Parts. The first Part briefly examines the jurisprudence focusing on the educational benefits of diversity as a compelling government interest. The second Part discusses the research showing that increased diversity leads to more innovative and error-free decisionmaking. The third Part summarizes the robust social science explaining the harms of racial isolation and stereotypes in all educational contexts to both students of color and to white students. Specifically, these harms are the confirmation of implicit racial biases and the triggering of stereotype threat. The research supports the conclusion that increased numbers of students of color in physics and other STEM classes is a powerful antidote to these harmful phenomena.

## I. THE JURISPRUDENCE

As has long been recognized,[14] the diversity discourse paradigm initially emerged in Justice Powell's concurrence in *Regents of the University of California v. Bakke*,[15] in which he proclaimed: "The atmosphere of 'speculation, experiment and creation'—so essential to the quality of higher education—is widely believed to be promoted by a diverse student body." His celebration of the atmospheric benefits of diversity was linked to the classroom experience in which students with diverse viewpoints promote the "robust exchange of ideas."[16]

Justice Powell's original conception was expanded by the Court in *Grutter* v. *Bollinger*,[17] which recognized three distinct educational objectives served by diversity:

> (i) Increased perspectives in classroom discussion, as discussion is rendered "livelier, more spirited, and simply more enlightening and interesting when the students have the greatest possible variety of backgrounds;"[18]
>
> (ii) Professionalism, as "student body diversity . . . better prepares [students] as professionals," because the skills students need for the "increasingly global marketplace can only be developed through exposure to widely diverse people, cultures, ideas, and viewpoints;"[19] and
>
> (iii) Civic engagement, meaning that a diverse student body is necessary for fostering "[e]ffective participation by members of all racial and ethnic groups in the civil life of our Nation, which is essential if the dream of one Nation, indivisible, is to be realized."[20]

Justice Kennedy's majority opinion in *Fisher v. University of Texas at Austin (Fisher I)*[21] affirmed the compelling interest in diversity set forth in *Grutter*, concluding that the "attainment of a diverse student body . . . serves values beyond race alone, including enhanced classroom dialogue and the lessening of racial isolation and stereotypes."[22]

The jurisprudence is far more capacious than the diversity discourse paradigm would have us believe.[23] The functional role diversity plays to serve these objectives need only be better understood. Social science research provides the language and the empirical support to explain why race matters in physics class.

## II. RACIAL DIVERSITY ENHANCES INNOVATION AND PROBLEM-SOLVING

Our country's need for continued innovation in science, technology, engineering, and mathematics (STEM) to meet the demands of a global workforce is undisputed.[24] A significant body of research provides at least one solution to

13. *See infra* Part II & III.
14. *See, e.g.*, Vincent Blasi, Bakke *as Precedent: Does Mr. Justice Powell Have a Theory?*, 67 CAL. L. REV. 21, 67 (1979); Joshua M. Levine, Comment, *Stigma's Opening:* Grutter*'s Diversity Interest(s) and the New Calculus for Affirmative Action in Higher Education*, 94 CAL. L. REV. 457, 457–58 (2006).
15. Regents of the Univ. of Cal. v. Bakke, 438 U.S. 265, 312 (1978) (Powell, J., concurring).
16. *Id.*
17. 539 U.S. 306 (2003).
18. *Id.* at 330.
19. *Id.*
20. *Id.*
21. 133 S. Ct. 2411 (2013).
22. *Id.* at 2418.
23. In a thoughtful piece in this volume, Elise C. Boddie interprets Justice Kennedy's jurisprudence to include a liberty as well as an equality prong linked to race consciousness. *See* Elise C. Boddie, *The Indignities of Colorblindness*, 64 UCLA L. REV. DISC. (forthcoming 2016).
24. *See* Brief of 823 Social Scientists as Amici Curiae in Support of Respondents at 33, Fisher v. Univ. of Tex. at Austin, No. 14-981 (U.S. Oct. 30, 2015) 2015 WL 6754975 (citing PRESIDENT'S COUNCIL OF ADVISORS ON SCI. & TECH., EXEC. OFFICE OF THE PRESIDENT, ENGAGE TO EXCEL: PRODUCING ONE MILLION ADDITIONAL COLLEGE GRADUATES WITH DEGREES IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS 1 (2012), https://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final_2-25-12.pdf); NAT'L ACAD. OF SCIS. ET AL., EXPANDING UNDERREPRESENTED MINORITY

these concerns: Diversity has been shown to play a critical role in spurring innovation and rigorous thinking. This body of research provides a resounding answer to the Chief Justice's question of why minority students are important in physics and other STEM classes.

The research supporting the claim that diversity enhances and catalyzes innovation and problem-solving is ample—and was presented to the Court in multiple amicus briefs in the *Fisher v. University of Texas at Austin (Fisher II)*[25] briefing. For example, DuPont, Intel, IBM, and the National Action Council of Minority Engineers submitted an amicus brief arguing that:

> [I]t is vitally important that the country maintain its long-held leadership position by producing more "'STEM innovators'—those individuals who have developed the expertise to become leading STEM professionals and perhaps the creators of significant breakthroughs or advances in scientific and technological understanding."[26]

These amicus briefs explain that "diverse STEM teams create 'better innovations and outcomes' than homogenous teams, and thus recognize that a diverse workforce is essential to succeeding in the competitive global marketplace."[27] The briefs refer to their own companies' experiences as well as the empirical data showing that "diverse groups typically outperform an individual of extraordinary ability or even homogenous groups of the best and brightest."[28] The experiences described by the amicus briefs have been widely replicated with studies finding that groups of people with diverse backgrounds and ways of viewing the world outperform groups of people who have similar backgrounds and perspectives,

PARTICIPATION: AMERICA'S SCIENCE AND TECHNOLOGY TALENT AT THE CROSSROADS 34 (2011), http://www.nap.edu/read/12984/chapter/5#34 [https://perma.cc/WH7Q-ZF8G].

25. 135 S. Ct. 2888 (2015) (No. 14-981) (granting writ of certiori for *Fisher v. University of Texas at Austin*, 758 F.3d 633 (5th Cir. 2014)).
26. Brief of DuPont et al. in Support of Respondents at 15, Fisher v. Univ. of Tex. at Austin, No. 14-981 (U.S. Nov. 2, 2015), 2015 WL 6754987.
27. *Id.* at 10; *see also Promoting Diversity & Inclusion*, DUPONT (Feb. 11, 2013), http://www2.dupont.com/media/en-us/news-events/february-2013/promoting-diversity-inclusion.html [https://perma.cc/479X-UEKU] ("[Diversity is] 'necessary to make DuPont a stronger competitor and leading innovator across all our businesses.'" (quoting Lydia Mallett—director of Respect for People, Diversity & Inclusion, and Employee Engagement)).
28. *Id.* at 10 (citing THOMAS J. EPENSHADE & ALEXANDRIA WALTON RADFORD, NO LONGER SEPARATE, NOT YET EQUAL: RACE AND CLASS IN ELITE COLLEGE ADMISSION AND CAMPUS LIFE 406 (2009)). As the National Academies have found, diversity strengthens innovation by "increasing the number of perspectives and the range of knowledge brought to bear" on an issue. NAT'L ACAD. OF SCIS. ET AL., *supra* note 24, at 24.



even when the latter group is composed of those deemed to be the best individual performers.[29]

The mechanisms underlying the enhanced decisionmaking of diverse teams include the conventional expectation that people from diverse backgrounds contribute distinct viewpoints. Importantly, though, the research shows that the improved outcomes are also linked to the less recognized difference in the way the group processes information.[30]

Apart from potential perspectival differences, diverse groups are more likely to trigger all of the individuals within the group to utilize integrative complexity, the differentiation and integration of multiple perspectives and dimensions.[31] By contrast, homogenous groups are prone to simple reasoning, when a single dimension (such as good-bad) is used to consider an issue. Homogenous groups are also at greater risk of engaging in "group think" in light of their perceived cohesiveness.[32] Further, research demonstrates a link between the quality of the informal interactions with diverse peers and analytical problem-solving and complex thinking skills.[33]

Recent studies have focused specifically on racial and ethnic heterogeneity in group decisionmaking. For example, in a study of juries, researchers found that racially diverse juries deliberated longer, considered a wider range of information, and made fewer inaccurate statements when discussing the trial of a black defendant than did all-white juries.[34] In this study, these effects were not a result of distinct perspectives offered by black jury members; instead, participants contributed more factual information to deliberations and made fewer errors discussing the case as compared to all-white juries, which supports the conclusion that racial heterogeneity led to more thorough information processing.[35]

In order to generate a diverse workforce, it is critical that American universities educate a higher number of black and Latino students who will enter STEM

29. *See generally* SCOTT E. PAGE, THE DIFFERENCE: HOW THE POWER OF DIVERSITY CREATES BETTER GROUPS, FIRMS, SCHOOLS, AND SOCIETIES (2007).
30. *See generally* Anthony Lising Antonio et al., *Effects of Racial Diversity on Complex Thinking in College Students*, 15 PSYCHOL. SCI. 507 (2004).
31. *Id.* (citing Peter Suedfeld et al., *Conceptual/Integrative Complexity*, *in* MOTIVATION AND PERSONALITY: HANDBOOK OF THEMATIC CONTENT ANALYSIS 393 (Charles P. Smith ed., 1992).
32. Antonio et al., *supra* note 30, at 509.
33. *See* Nicholas A. Bowman, *College Diversity Experiences and Cognitive Development: A Meta-Analysis*, 80 REV. EDUC. RES. 4, 20 (2010) (examining twenty-three higher education studies and concluding that college diversity experiences are positively related to cognitive development).
34. *See generally* Samuel R. Sommers, *On Racial Diversity and Group Decision Making: Identifying Multiple Effects of Racial Composition on Jury Deliberations*, 90 J. PERSONALITY & SOC. PSYCHOL. 597 (2006).
35. *Id.*

fields and other science-related fields such as medicine. "As companies do more and more business around the world, diversity isn't simply a matter of doing what is fair or good public relations. It's a business imperative."[36] For instance, amicus 3M, a science-based company with a culture of creative collaboration that inspires powerful technologies, "employs 90,000 people worldwide and has operations in more than 70 countries."[37] Similarly, amicus Deloitte LLP works "in over 150 different countries and territories," with "hundreds of American-trained employees . . . in those countries."[38]

Within STEM education, innovators who focus on diversity are having significant successes. Professor Joseph DeSimone at the University of North Carolina has created a research group that prioritizes diversity.[39] The website proclaims that over the last two decades:

> The Lab's PhD graduates have been from underrepresented groups in science and engineering fields. DeSimone's 56 total PhD graduates include 28 women, 6 African American students, and 1 Hispanic student. Additionally, of the 55 postdoctoral scholars that have come through Professor DeSimone's lab, over 40% have been from underrepresented groups. DeSimone also directed UNC's NSF Science and Technology Center for Environmentally Responsible Solvents and Processes (CERSP). In its 10-year existence, more than 170 CERSP-supported students (27%) were African American.
>
> With the successes that have come out of the DeSimone Lab, such as supercritical polymerization solvents and PRINT, it is hard to dismiss the notion that diversity has not played a key role at many points in the lab's research achievements.[40]

The benefits of diversity are even clearer in the health care arena. The National Institutes of Health (NIH) Working Group on Diversity in the Biomedical Research Workforce writes, "Diverse teams working together and capitalizing on individuality and distinct perspectives outperform homogenous teams. This is particularly true when teams address complex problems, such as

36. Carol Hymowitz, *The New Diversity*, WALL STREET J. (Nov. 14, 2005, 12:01 AM), http://www.wsj.com/articles/SB113164452069493749 [https://perma.cc/KF6E-JHYV].
37. Brief of Fortune-100 and Other Leading American Businesses as Amici Curiae in Support of Respondents at 11, Fisher v. Univ. of Tex. at Austin, No. 14-981 (U.S. Nov. 2, 2015), 2015 WL 6735839.
38. *Id.*
39. *Diversity and Innovation*, DESIMONE RES. GROUP, http://desimone-group.chem.unc.edu/?cat=10 [https://perma.cc/S6Z6-TKJ8].
40. *Id.*



those that characterize biomedical and behavioral research, technology, and health."[41]

## III. THE EFFECTS OF IMPLICIT BIAS, RACIAL ANXIETY, AND STEREOTYPE THREAT

Research in the fields of psychology and neuroscience bolsters the argument that the presence of underrepresented minority students in STEM classes confers compelling educational benefits on the entire student body. This research provides a more nuanced, yet imperative, justification for racial and ethnic diversity in universities and in the workplace. When certain fields—such as physics—contain few or no members of particular racial or ethnic groups, three distinct but related phenomena—implicit bias, racial anxiety, and stereotype threat—are highly likely to be exacerbated.

The presence of more students of color in STEM classes has enormous potential to reduce the prevalence and harm of each of these phenomena. Briefly, diversity reduces implicit biases, because students of color will be counter-stereotype exemplars; lessens racial anxiety, as students of various races have the opportunity to work together; and prevents stereotype threat, as increased numbers of racial or ethnic minorities reduces identity salience. The reduction of these phenomena helps students of color in obvious ways, but it also helps white students who benefit by emerging from college less biased and with lower levels of racial anxiety. All of the students will be more likely to succeed in diverse work environments.

### 1. Implicit Bias

The phenomenon of implicit bias has become broadly recognized, including by the Supreme Court in recent decisions.[42] It refers to the automatic

41. WORKING GRP. ON DIVERSITY IN THE BIOMEDICAL RESEARCH WORKFORCE & THE ADVISORY COMM. TO THE DIR., NAT'L INSTS. OF HEALTH, DRAFT REPORT OF THE ADVISORY COMMITTEE TO THE DIRECTOR WORKING GROUP ON DIVERSITY IN THE BIOMEDICAL RESEARCH WORKFORCE 11 (2012) (citing Lu Hong & Scott E. Page, *Groups of Diverse Problem Solvers Can Outperform Groups of High-Ability Problem Solvers*, 101 PROC. NAT'L ACAD. SCIS. USA 16385 (2004) and VALERIE I. SESSA & JODI J. TAYLOR, EXECUTIVE SELECTION: STRATEGIES FOR SUCCESS (2000)), acd.od.nih.gov/Diversity%20in%20the%20Biomedical%20Research%20Workforce%20Report.pdf.
42. *Cf.* Tex. Dep't of Hous. & Cmty. Affairs v. Inclusive Cmty. Project, Inc., 135 S. Ct. 2507, 2511–12 (2015) (acknowledging the value of disparate impact analysis in "uncovering" and "counteract[ing] unconscious prejudices").

association of stereotypes and attitudes with different identity characteristics.[43] These associations take place at the unconscious or implicit level and are often contrary to people's conscious values and beliefs.[44] Implicit racial and ethnic biases can be understood to include unconscious stereotypes and attitudes that result from repeated exposures to cultural stereotypes that pervade society.[45] Social scientists have developed an increasingly sophisticated array of mechanisms for identifying and measuring the implicit presence of stereotypes and attitudes we consciously deny.[46]

Both laboratory and field studies provide powerful evidence that implicit bias (both negative toward people of color and positive toward white people), though existing in the unconscious, translates into a wide range of behaviors that have significant effects. The body of evidence is substantial, but a few examples from across various fields are demonstrative. One laboratory study demonstrated that white people with stronger implicit racial bias perceive black faces as angrier than do white people with weaker levels of bias, and those with strong implicit bias are apt to consider a particular expression happy or neutral if the face is white, but neutral or angry if the face is black.[47] Further, white physicians who implicitly associate black patients with being "less cooperative" are less likely to refer black patients with acute coronary symptoms for thrombolysis treatment than white patients with the same symptoms.[48] A September 2015 field study found that doctors were five times less likely to administer opioid pain medication to black children suffering from appendicitis compared to

43. Jerry Kang et al, *Implicit Bias in the Courtroom*, 59 UCLA L. REV. 1124, 1130 (2012).
44. *Id.*
45. L Song Richardson & Phillip Atiba Goff, *Implicit Racial Bias in the Public Defender Triage*, 121 YALE L.J. 100, 103 (2013).
46. A widely used measure of implicit bias is the "Implicit Association Test" (IAT). *See, e.g.*, Anthony G. Greenwald et al., *Measuring Individual Differences in Implicit Cognition: The Implicit Association Test*, 74 J. PERSONALITY & SOC. PSYCHOL. 1464, 1464–66 (1998) (introducing the Implicit Association Test). The IAT is a computer task that measures time differences between category or schema consistent pairings and inconsistent pairings. Kang et al., *supra* note 43, at 1130; *see, e.g.*, Anthony G. Greenwald et al., *Understanding and Using the Implicit Association Test: I. An Improved Scoring Algorithm*, 85 J. PERSONALITY & SOC. PSYCHOL. 197 (2003). Other measures of implicit bias include physiological responses to images. Much of this work has focused on reactions to black faces, assessing blood pressure changes, increases in sweat, and brain imaging shown in functional magnetic resonance imaging scans. *See e.g.*, Jason P. Mitchell et al., *Thinking About Others: The Neural Substrates of Social Cognition*, *in* SOCIAL NEUROSCIENCE: PEOPLE THINKING ABOUT PEOPLE 63, 66 (John T. Cacioppo et al. eds., 2006). These studies show marked responses to faces of black men—with skin tone an important factor.
47. Kurt Hugenberg & Galen V. Bodenhausen, *Ambiguity in Social Categorization: The Role of Prejudice and Facial Affect in Racial Categorization*, 15 PSYCHOL. SCI. 342 (2004).
48. *See* Alexander R. Green et al., *Implicit Bias Among Physicians and Its Prediction of Thrombolysis Decisions for Black and White Patients*, 22 J. GEN. INTERNAL MED. 1231, 1231–38 (2007).



white children at the same pain threshold.[49] Multiple studies have also found that those with higher implicit bias levels against black people are more likely to interpret nonweapons as weapons when held by black people, and they are quicker in their decision to shoot an unarmed person who is black than a person who is white.[50] Similarly, studies show high levels of implicit bias against Latinos—and assumptions that people identified as Latino are less educated and less likely to work in white collar jobs.

Studies over several decades confirm that negative and positive attitudes manifest in nonverbal behaviors during interpersonal interactions.[51] Research, not surprisingly, indicates that white people with negative implicit racial attitudes display behavior consistent with those attitudes.[52] The ways that our unconscious attitudes shape our interpersonal behavior is meaningful—most of us know intuitively that nonverbal behaviors, including the degree of interpersonal distance and amount of eye contact, determine whether we read someone as friendly and open or hostile and closed. Researchers have confirmed this phenomenon and have found that people of any race who are subject to distancing and related behavior tend to reciprocate with similar behavior.[53] This sets up a negative feedback loop that can have significant consequences. For instance, in an experiment of how black candidates in a mock job interview reacted to distancing and other negative nonverbal behavior, researchers found that the black candidates in the distancing condition responded in kind and as a result were rated as significantly less adequate for the job as well as being less calm and composed.[54]

Implicit biases are based upon cultural stereotypes rather than individual beliefs—and so it is not surprising that biases in a particular society map onto established cultural hierarchies. Racialized stereotypes about traits like competence, work ethic, and violence can be detrimental to people of color. For instance, field studies demonstrate that black and Latino job applicants are significantly less likely to receive callbacks than are equally qualified white applicants.[55] Particularly disturbing is the finding that black defendants who have

49. Monika K. Goyal et al., *Racial Disparities in Pain Management of Children With Appendicitis in Emergency Departments*, 169 JAMA PEDIATRICS 996 (2015).
50. Joshua Correll et al., *Across the Thin Blue Line: Police Officers and Racial Bias in the Decision to Shoot*, 92 J. PERSONALITY & SOC. PSYCHOL. 1006, 1015–22 (2007).
51. *See* John F. Dovidio et al., *Implicit and Explicit Prejudice and Interracial Interaction*, 82 J. PERSONALITY & SOC. PSYCHOL. 62 (2002) (discussing literature).
52. *Id.* at 66.
53. *Id.* at 63.
54. Carl O. Word et al., *The Nonverbal Mediation of Self-Fulfilling Prophecies in Interracial Interaction*, *in* SOCIAL PSYCHOLOGY 51 (Arie W. Kruglanski & E. Tory Higgins eds., 2003).
55. *See, e.g.*, Marianne Bertrand & Sendhil Mullainathan, *Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination*, 94 Am. Econ. Rev. 991,

stereotypically "black" features serve up to eight months longer, and that such defendants are more likely to be sentenced to death in cases involving white victims.[56]

It surprises most lawyers to realize that stereotypes may cause us to view identical information differently—we prize our ability to be objective, and we presume we know merit when we see it. In a recent study by a consulting group, sixty partners at national law firms were given an identical memorandum written by "Thomas Meyer," identified as a third-year associate who went to New York University Law School.[57] Half of the partners were led to believe that Meyer was white, while the other half thought that Meyer was black. The partners who thought Meyer was white found an average of 2.9 of the 7 spelling/grammar errors in the memo, while those who thought he was black found an average of 5.8 of the 7 spelling/grammar errors. Qualitative assessments of the memos were also striking—with white Tom Meyer described as having "good analytic skills" and "potential" while black Tom Meyer was "average at best" and one partner stated, "can't believe he went to NYU."[58]

The damaging effect of implicit bias occurs in the classroom setting, as well. Implicit biases held by white students against underrepresented minority students create impediments to cross-racial understanding—identified by the Court as among the benefits diversity is intended to confer. In addition, a complete dearth of particular racial and ethnic groups in some categories of classes will undoubtedly contribute to implicit biases rooted in stereotypes about intellectual ability.

The power of implicit bias to undermine the educational opportunities for students of color are obvious—their contributions may fail to be recognized for their merit, they may well experience incidents in which they are treated differently by teachers, peers, and administration, or even assumed not to be students at all. White students' implicit bias against students of color will also undermine the interpersonal and educational benefits that would accrue to them from the

993–94 (2004)(conducting a field study of Boston and Chicago labor markets, "white" sounding names receive 50 percent more callbacks than "black" sounding names); Devah Pager et al., *Discrimination in a Low-Wage Labor Market: A Field Experiment*, 74 AM SOC. REV. 777 (2009) ("Blacks were only half as likely to receive a callback or job offer relative to equally qualified whites; moreover, black and Latino applicants with clean backgrounds fared no better than a white applicant just released from prison.").

56. Jennifer Eberhardt et al., *Looking Deathworthy: Perceived Stereotypicality of Black Defendants Predicts Capital-Sentencing Outcomes*, 17 PSYCH. SCI. 383 (2006).

57. *See generally* ARIN N. REEVES, WRITTEN IN BLACK & WHITE: EXPLORING CONFIRMATION BIAS IN RACIALIZED PERCEPTIONS OF WRITING SKILLS (2014)http://www.nextions.com/wp-content/files_mf/14468226472014040114WritteninBlackandWhiteYPS.pdf.

58. *Id.*



presence of students of color—which is not a comparable harm, but still salient from the University of Texas's perspective.

When we move from college classrooms to the lives that students will have afterward, the imperative to reduce implicit bias becomes even more evident. Implicit bias has been recognized as a factor in police treatment of black and Latino citizens, doctors' failures to provide comparable care across patients, and teachers' disciplinary actions in education.[59] Corporations and other institutions have recognized implicit bias as a detriment to hiring and retaining the most qualified and effective workforce and thus, many are engaged in time- and resource-intensive efforts to reduce the effect of implicit bias in the workplace.[60]

The abundant harm that implicit bias causes for underrepresented minorities is obvious, but for purposes of exploring the full scope of the effects, we must recognize that those in the majority also experience harm from harboring implicit bias. As mentioned, those who hold racial biases will behave in ways that elicit negative behavior from others. Research with physicians has found that those with stronger biases against black patients speak faster, explain less, and are seen as less warm—as a result, their patients rate them as less satisfactory and are less prone to treatment adherence and follow-up.[61] In addition, as I noted earlier, implicit biases are often contrary to people's conscious beliefs and values—behaving in line with stereotypes and unconscious attitudes rather than our firmly held beliefs and values is a violation of our self-concept. For any person, realizing that we have violated our professional obligations or moral principles will cause real distress.[62]

The negative impact of implicit bias on interpersonal evaluations, workplace productivity, and academic settings is clear, and so social scientists have begun identifying mechanisms to reduce bias or to prevent its behavioral manifestations. Increasing contact between different racial groups and the presence of

59. *Id.*

60. Brief of Fortune-100 and Other Leading American Businesses as Amici Curiae in Support of Respondents at 11, Fisher v. Univ. of Tex. at Austin, No. 14-981 (U.S. Nov. 2, 2015), 2015 WL 6735839.

61. *See* Lisa A. Cooper et al., *The Associations of Clinicians' Implicit Attitudes About Race With Medical Visit Communication and Patient Ratings of Interpersonal Care*, 102 AM. J. PUB. HEALTH 979, 981 (2012).

62. I have provided implicit bias trainings to hundreds of judges in the past two years and can attest to the pain experienced by judges who conclude that, despite their commitment to objectivity and rejection of racism, they may have removed a child from a home or sentenced a youth to a longer sentence because of race. This pain cannot be compared to the pain of the families or sentenced youth—but it belies the assumption that implicit bias only harms those on the receiving end of the bias.

counter-stereotypical exemplars[63] have been shown to reduce implicit bias. The presence of black and Latino students in physics classes achieves both of these aims. Through increased contact with people of other races, we begin to rely less on embedded stereotypes about their racial or ethnic group and more on the actual characteristics of individual people. Increased contact also provides more opportunities for positive interracial interactions, which in and of themselves reduce bias. Similarly, the presence of counter-stereotypical exemplars helps us broaden our understanding of other racial and ethnic groups and move away from cultural stereotypes as a way to categorize others. Thus, simply increasing the number of black and Latino students in physics class is an evidence-based strategy for reducing harmful biases among other students.

### 2. Racial Anxiety

The effects of bias on those experiencing it and those engaging in it are physiologically and cognitively measurable—as evidenced by research on racial anxiety. Racial anxiety is not nearly as well recognized in legal academic literature as implicit bias, but it has been widely studied in social psychology. Racial anxiety, like implicit bias, causes harm to both people of color and white people, but with differential effects.

Interracial interactions have been found to trigger anxiety, which can be acute, experienced as physiological threat and cognitive depletion in anticipation of and following an interracial interaction.[64] In addition to the physical symptoms of anxiety, racial anxiety tends to affect verbal and nonverbal behaviors.[65] People experiencing anxiety often distance themselves from others, share less eye contact, and use a less friendly and engaging verbal tone.

In the relational context, worry is often felt on both sides of the racial dyad, but the subject of the concern differs. People of color often experience

63. Nida Denson, *Do Curricular and Cocurricular Diversity Activities Influence Racial Bias? A Meta-Analysis*, 79 REV. EDUC. RES. 805 (2009) (finding that participation in diversity-related activities during college reduces racial bias among undergraduate students). *See generally* Linda R. Tropp & Elizabeth Page-Gould, *Contact Between Groups*, *in* 2 APA HANDBOOK OF PERSONALITY AND SOCIAL PSYCHOLOGY, GROUP PROCESSES 535 (Mario Mikulincer et al. eds., 2015) (summarizing intergroup contact literature).

64. *See generally* Elizabeth Page-Gould et al., 95 J. PERSONALITY & SOC. PSYCHOL. 1080 (2008). People of color's physiological and psychological health can also be compromised by interracial interactions or by the anticipation of assessment by whites. As with other stressors, racial anxiety can yield cardiovascular and other stress-induced illnesses.

65. *See* Jennifer A. Richeson & J. Nicole Shelton, *Negotiating Interracial Interactions: Costs, Consequences, and Possibilities*, 16 CURRENT DIRECTIONS PSYCHOL. SCI. 316 (2007) (reviewing research exploring how interracial interactions continue to be awkward within an increasingly diverse world).



the concern that they will be the subject of discrimination and hostile or distant treatment. White people may be concerned that they will be assumed to be racist by a person of color and therefore, will be met with distrust or hostility.[66] Not surprisingly, if two people are both anxious that an interaction will be negative, it often is.[67] So racial anxiety can result in a negative feedback loop in which both parties' fears appear to be confirmed by the behavior of the other.

Rarely is either person's concern recognized by the other. The white person focuses upon his worry that a person of another race will avoid or reject him because of the assumption that he is prejudiced, and the person of color focuses upon his concern that he will be discriminated against because of existing stereotypes. Both people are likely to act upon their concerns—failing to initiate contact through "welcoming gestures, open body language, or mutual eye gaze."[68] Each person will then attribute the other's failure to be friendly or welcoming as confirming their initial belief.

J. Nicole Shelton and Jennifer Richeson have found that the phenomenon of "pluralistic ignorance," which occurs when "people observe others behaving similarly to themselves but believe that the same behaviors reflect different feelings and beliefs,"[69] is particularly acute in the context of race. The researchers posited that the phenomenon would hold true but would be exacerbated by the anxiety related to America's fraught history of racial discrimination and oppression and the tendency of people to generalize an individual act by a member of a different race to the racial group to which the person belongs.[70] So when a white person does not feel welcome to sit at a table with a black person, she generalizes this experience to a broad conclusion that black people as a group are not interested in interacting with white people; and similarly, the black person who observed the white person walking by the open seat at his table will conclude that white people as a group are uninterested in interacting with black people.[71]

66. *See, e.g.*, Robyn K. Mallet et al., *Understanding the Intergroup Forecasting Error*, *in* MOVING BEYOND PREJUDICE REDUCTION: PATHWAYS TO POSITIVE INTERGROUP RELATIONS 64 (Linda R. Tropp & Robyn K. Mallet eds., 2011).

67. *See* J. Nicole Shelton & Jennifer A. Richeson, *Intergroup Contact and Pluralistic Ignorance*, 88 J. PERSONALITY & SOC. PSYCHOL. 91 (2005).

68. *Id.* at 92.

69. *Id.* (citing Dale T. Miller & Cathy McFarland, *When Social Comparison Goes Awry: The Case of Pluralistic Ignorance*, *in* SOCIAL COMPARISON: CONTEMPORARY THEORY AND RESEARCH 287 (Jerry Suls & Thomas Ashby Wills eds., 1991), Dale T. Miller & Cathy McFarland, *Pluralistic Ignorance: When Similarity Is Interpreted as Dissimilarity*, 53 J. PERSONALITY & SOC. PSYCHOL. 298 (1987), and Deborah A. Prentice & Dale T. Miller, *Pluralistic Ignorance and the Perpetuation of Social Norms by Unwitting Actors*, 28 ADVANCES EXPERIMENTAL SOC. PSYCHOL. 161 (1996)).

70. *Id.*

71. *Id.* at 93.

Shelton and Richeson concluded in a series of studies that both white and black people report interest in contact with the other, but both believe the other group will have little interest in interaction with them.[72] The studies confirmed that both groups attributed their own lack of action to engage in interracial contact to be a fear of rejection, but presume that inaction by the member of the other racial group reflects lack of interest.[73]

Clearly, racial anxiety inhibits successful interaction between people of different racial and ethnic groups. Racial anxiety has been recognized as affecting interactions between health care providers and patients, teachers and students, and other contexts in which the quality of interaction matters.[74] These effects can be deeply consequential. For example, in a study of breast cancer patients, a context in which black women have shown significantly worse outcomes even when income and insurance availability are held constant, Siminoff and colleagues found that white doctors spent significantly less time engaging in relationship-building activities with patients of color.[75] These racial dynamics clearly affect the quality of services, as well as how much care a patient receives or pursues. As with implicit bias, the most profound harm is to the black or Latino patients, but the doctor who learns he is providing racially disproportionate care is almost assuredly acting contrary to his or her values and commitments.

Racial anxiety undermines the academic experience of all students, who may experience it in interactions with each other and with faculty. The key antidote to racial anxiety is increased contact between racial and ethnic groups—as individuals have more opportunities to interact with others, their anxiety wanes. Intergroup contact increases the number of positive interracial experiences, allows individuals to practice conversations across racial lines, and lessens the worry about being the subject of bias or of being perceived as perpetuating discrimination.

### 3. Stereotype Threat

Stereotype threat refers to the phenomenon in which a member of a group fears confirming a widely held belief that one's group lacks competence in some

72. *Id.* at 104.
73. *Id.*
74. *See generally* RACHEL D. GODSIL ET AL., PERCEPTION INST., 1 SCIENCE OF EQUALITY: ADDRESSING IMPLICIT BIAS, RACIAL ANXIETY, AND STEREOTYPE THREAT IN EDUCATION AND HEALTH CARE (2014), http://perception.org/app/uploads/2014/11/Science-of-Equality-111214_web.pdf.
75. *See* Laura A. Siminoff et al., *Cancer Communication Patterns and the Influence of Patient Characteristics: Disparities in Information-Giving and Affective Behaviors*, 62 PATIENT EDUC. & COUNSELING 355 (2006).



sort of activity (academic, athletic, etc.).[76] The most well-documented effect of stereotype threat is on the academic performance of students of color who fear confirming the negative stereotypes of intellectual inferiority.[77]

Stereotype threat has the effect of undermining the expression of minority students' academic capacity.[78] A recent study described the harm of stereotype threat for black and Latino students as "the norm in academic environments."[79] Indeed, Greg Walton and Steve Spencer conducted a meta study and concluded that stereotype threat accounts for a substantial proportion of racial achievement gaps.[80]

It may seem perplexing that the effects of stereotype threat are so pronounced—but when people are aware of a negative stereotype about their group in a domain in which they are identified, their attention is split between the test at hand and worries about being seen stereotypically. Research finds that anxiety about negative stereotypes can trigger physiological changes in the body and the brain (especially an increased cardiovascular profile of threat and activation of brain regions used in emotion regulation), cognitive reactions (especially a vigilant self-monitoring of performance), and affective responses (especially the suppression of self-doubts). These effects all divert cognitive resources that could otherwise be used to maximize task performance.[81] Stereotype threat occurs not because students are insufficiently prepared or lack capacity, but because stereotypes interfere with their ability to perform consistent with their capacity and preparation.

76. *See generally* CLAUDE M. STEELE, WHISTLING VIVALDI: HOW STEREOTYPES AFFECT US AND WHAT WE CAN DO (2011); Phillip Atiba Goff et al., *The Space Between Us: Stereotype Threat and Distance in Interracial Contexts*, 94 J. PERSONALITY & SOC. PSYCHOL. 91, 91–92 (2008) (discussing literature).
77. The seminal work includes STEELE, *supra* note 76; Steven J. Spencer et al., *Stereotype Threat and Women's Math Performance*, 35 J. EXPERIMENTAL SOC. PSYCHOL. 4 (1999); Claude M. Steele, *A Threat in the Air: How Stereotypes Shape Intellectual Identity and Performance*, 52 AM. PSYCHOLOGIST 613 (1997); Claude M. Steele et al., *Contending With Group Image: The Psychology of Stereotype and Social Identity Threat*, 34 ADVANCES EXPERIMENTAL & SOC. PSYCHOL. 379 (2002); Claude M. Steele & Joshua Aronson, *Stereotype Threat and the Intellectual Test Performance of African Americans*, 69 J. PERSONALITY & SOC. PSYCHOL. 797 (1995).
78. For a review of evidence of stereotype threat, see, Brief of Social and Organization Psychologists as Amici Curiae Supporting Respondents at 12–17, Fisher v. Univ. of Tex. at Austin, 133 S. Ct. 2411 (2013) (No. 11–345); Gregory M. Walton et al., *Affirmative Meritocracy*, 7 SOC. ISSUES & POL'Y REV. 1, 2–4 (2013).
79. Sam Erman & Gregory M. Walton, *Stereotype Threat and Antidiscrimination Law: Affirmative Steps to Promote Meritocracy and Racial Equality in Education*, 88 S. CAL. L. REV. 307, 313 (2015) (citing Walton et al., *supra* note 78, at 8–9).
80. *Id.*
81. *See* Toni Schmader et al., *An Integrated Process Model of Stereotype Threat Effects on Performance*, 115 PSYCHOL. REV. 336, 337 (2008).

Stereotype threat, like implicit bias and racial anxiety, has obvious and profound effects on students of color, but it also undermines the educational experience of students not under direct threat because their peers are not engaging and contributing to the educational environment to the degree they are capable. For instance, in group projects, which may be particularly common in hands-on courses in fields like engineering, students of color may not perform to their capacity, which is to the detriment of the entire group. The performance or lack of engagement by students of color experiencing stereotype threat has the effect of confirming negative stereotypes—which then reinforces implicit biases. Thus, the negative impact of stereotype threat on white students is even more likely in classes with very few students of color, in which stereotypes are likely triggered.

Interestingly, researchers have specifically examined the phenomenon of stereotype threat among white people, as it relates to their interactions with black people.[82] Researchers engaged undergraduate students at Stanford University in several distinct studies. In the first study, participants were shown pictures of their potential conversation partners—who were either white or black men—and told whether their conversation topic was racial profiling or love and relationships. Participants were later brought into a room where the chairs were lined up in the corner of the room and asked to set up the chairs "so that the three of them could have a comfortable conversation" and to "take a seat" in one of the chairs while the experimenter ostensibly retrieved the conversation partners from another room.[83] The study confirmed that participants who were assigned to talk about racial profiling with two black men distanced themselves most from their partners.

The second study continued exploring the hypothesis that stereotype threat, rather than bias or other factors, would cause white participants to physically distance themselves from black partners by replicating the first study and in addition, requiring one set of students to read a "pro-racial profiling" position to black conversation partners.[84] In this study, participants also completed the Implicit Association Test, a measure of implicit bias, as well as several other measures of explicit prejudice.[85] This study showed that white participants sat farther from black partners than white partners when they were expected to discuss their own views about racial profiling, but not when openly assigned an opinion.[86] The

82. *See generally* Goff et al., *supra* note 76.
83. *Id.* at 93.
84. *Id.* at 96.
85. *Id.* at 97.
86. *Id.* at 98.



study also showed that stereotype activation was predictive of distancing as was the measure of interethnic anxiety, but that none of the bias measures were predictive of distancing.[87] In sum, stereotype threat and interethnic anxiety, not implicit or explicit bias or prejudice, led white male Stanford students to sit further away from black conversation partners when discussing their own views about racial profiling.

In a later study, the researchers sought to determine whether the white participants were conscious of the stereotype threat when they were informed that they would be discussing racial profiling with a black conversation partner. The researchers found that 27 percent of the participants openly showed stereotype threat-relevant thoughts. Examples of stereotype threat-relevant thought listings included statements such as the following:

> "I feel awkward knowing that I, a White person, will be talking to a Black man about racial profiling;" "I hope it doesn't affect my conversation on the subject that the other person is of a different race, though I don't imagine it would;" "My first thought when I saw 'racial profiling' as a topic, and my partner was of a different ethnicity was that I might want to be cognizant of this and be somewhat careful in my remarks;" and "Oh shit, this guy is Black!"[88]

This line of research establishes the presence of stereotype threat among white people, as distinct from the phenomena of implicit bias and racial anxiety. And thus, in addition to the collateral impact of stereotype threat among students of color on white students, white students themselves may experience threat as a result of lack of diversity in academic settings. While the negative effects of stereotype threat may not be evenly distributed among racial groups, research evidence refutes the notion that they are limited to stereotyped groups themselves.

The presence of other students of different racial and ethnic groups has been shown to reduce stereotype threat experienced by students of color.[89] As stated by amici Experimental Psychologists in their submission to the Court:

87. They first used a "word-stem completion" instrument to determine whether the participants, white male Stanford students, were subject to concern about the stereotype that whites are racist, as contrasted with general social anxiety and a strong sense of white identity. This instrument uses ten pretested words for each category and then sixty filler words. The instrument determines which of the three concepts—stereotype threat, general anxiety, or white racial identity—is activated by the number of target words a participant completes in a "category-relevant manner" (such as RACIST as opposed to RACKET) divided by the total number of target words completed. The ratio is the measure of concept activation. *Id.* at 99.
88. *Id.* at 102.
89. *See* Valerie Purdie-Vaughns et al., *Social Identity Contingencies: How Diversity Cues Signal Threat or Safety for African Americans in Mainstream Institutions*, 94 J. PERSONALITY & SOC. PSYCHOL. 615 (2008); Walton et al., *supra* note 78, at 3–19.

> When *A* is the only black student taking Medieval Literature, he is likely to feel like, and to be perceived as, "the Black kid" in the class. When *B* is the only woman majoring in Mechanical Engineering, she is likely to feel like, and to be perceived as, not just an Engineering major, but a *woman* majoring in Engineering. But when there are multiple members of one's racial or gender group present, a person's identity is less defined by group membership. Now *A* is just a student taking Medieval Literature and *B* is just someone studying Engineering. Stereotype threat diminishes in diverse environments, because group membership tends to become less defining of individual identity.[90]

The nascent research on stereotype threat experienced by whites concerned about appearing racist suggests that opportunities to interact with a diverse set of peers in classes in which race is not directly salient may be constructive. In addition, moving beyond the classroom to the fields students will enter, the benefits of diversity have been well documented. Medical students who are educated in a diverse student body report that they are better able to work with patients of diverse backgrounds.[91] The benefits are even greater when students engage in informal discussions about course materials with peers from diverse backgrounds,[92] and when medical schools actively promote student engagement and perspective-sharing across diverse backgrounds.[93]

## CONCLUSION

In an ideal oral argument, counsel for the University of Texas would have responded crisply to the Chief Justice's question:

Your Honor, the classroom-wide educational benefits of diversity in a physics class are well supported by contemporary scientific research: First, in STEM as in other fields, the presence of minority students promotes innovation, critical thinking, and deeper academic engagement; and second, it would create an environment in which all students can perform to their capacity

90. Brief of Experimental Psychologists as Amici Curiae in Support of Respondents at 23–24, Fisher v. Univ. of Tex. at Austin, 133 S. Ct. 2411 (2013) (No. 11-345).

91. *See* Gretchen Guiton et al., *Student Body Diversity: Relationship to Medical Students' Experiences and Attitudes*, 82 ACAD. MED. S1, S3 (Supp. Oct. 2007); *see also* Somnath Saha et al., *Student Body Racial and Ethnic Composition and Diversity-Related Outcomes in US Medical Schools*, 300 JAMA 1135, 1135 (2008).

92. *See* Guiton et al., *supra* note 91, at S4.

93. *See* Emory Morrison & Douglas Grbic, *Dimensions of Diversity and Perception of Having Learned From Individuals From Different Backgrounds: The Particular Importance of Racial Diversity*, 90 ACAD. MED. 937, 942 (2015); *see also* Saha et al., *supra* note 91, at 1141–42.



through the reduction of stereotypes, racial anxiety, and racial isolation. Depriving your hypothetical physics class of the diversity UT seeks to achieve would do a disservice to every student in that class.