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Author: Bullock Justin L. MD, MPH; Lockspeiser Tai MD, MHPE; del Pino-Jones Amira MD; Richards Regina PhD, MSW; Teherani Arianne PhD; Hauer Karen E. MD, PhD

Title: They Don't See a Lot of People My Color: A Mixed Methods Study of Racial/Ethnic Stereotype Threat Among Medical Students on Core Clerkships

They Don't See a Lot of People My Color: A Mixed Methods Study of Racial/Ethnic

Stereotype Threat Among Medical Students on Core Clerkships

Justin L. Bullock, MD, MPH, Tai Lockspeiser, MD, MHPE, Amira del Pino-Jones, MD, Regina

Richards, PhD, MSW, Arianne Teherani, PhD, and Karen E. Hauer, MD, PhD

J.L. Bullock is first-year resident in internal medicine, University of California, San Francisco

School of Medicine, San Francisco, California.

T. Lockspeiser is assistant dean of medical education – assessment, evaluation, and outcomes

and associate professor, Department of Pediatrics, University of Colorado School of Medicine,

Aurora, Colorado.

A. del Pino-Jones is associate professor, Department of Medicine, University of Colorado

School of Medicine, Aurora, Colorado.

R. Richards is director, Office of Diversity and Inclusion, and assistant professor, Department

of Family Medicine, University of Colorado School of Medicine, Aurora, Colorado.

A. Teherani is director of program evaluation and professor, Department of Medicine and

Center for Faculty Educators, University of California, San Francisco School of Medicine, San

Francisco, California.

K.E. Hauer is associate dean for competency assessment and professional standards and

professor, Department of Medicine, University of California, San Francisco School of Medicine,

San Francisco, California.

Correspondence should be addressed to Karen E. Hauer, University of California, San Francisco,

533 Parnassus Ave., U80, Box 0710 San Francisco, CA 94143; telephone: (415) 502-5475;

email: karen.hauer@ucsf.edu.

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Abstract

Purpose

Stereotype threat is an important psychological phenomenon in which fear of fulfilling negative stereotypes about one's group impairs performance. The effects of stereotype threat in medical education are poorly characterized. This study examined the prevalence of racial/ethnic stereotype threat amongst fourth-year medical students and explored its impact on students' clinical experience.

Method

This was an explanatory sequential mixed methods study at two institutions in 2019. First, the authors administered the quantitative Stereotype Vulnerability Scale (SVS) to fourth-year medical students. The authors then conducted semi-structured interviews among a purposive sample of students with high SVS scores, using a qualitative phenomenographic approach to analyze experiences of stereotype threat. The research team considered reflexivity through group discussion and journaling.

Results

Overall, 52% (184/353) of students responded to the survey. Collectively, 28% of students had high vulnerability to stereotype threat: 82% of Black, 45% of Asian, 43% of Latinx, and 4% of White students. Eighteen students participated in interviews. Stereotype threat was a dynamic, three-stage process triggered when students experienced the workplace through the colored lens of race/ethnicity by standing out, reliving past experiences, and witnessing microaggressions. Next, students engaged in internal dialogue to navigate racially charged events and workplace power dynamics. These efforts depleted cognitive resources and interfered with learning. Finally, students responded and coped to withstand threats. Immediate and deferred interventions from allies reduced stereotype threat.

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Conclusions

Stereotype threat is common, particularly among non-White students, and interferes with learning. Increased minority representation and developing evidence-based strategies for allyship around microaggressions could mitigate effects of stereotype threat.

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An equitable learning environment provides all students with opportunities to learn, demonstrate their learning and succeed.[1] Students from racial/ethnic groups underrepresented in medicine (UIM) face inequities because they must simultaneously confront pressures universal to medical students—improving patient care skills and medical knowledge, adapting to new clinical settings, deciphering spoken and unspoken expectations—while also navigating UIM specific pressures.[2,3] UIM learners (African American, Latinx and Native) and other non-majority racial/ethnic groups may face additional pressures that disproportionately and negatively affect their performance, including supervisor biases, possibly poorer prior academic training, and stereotype threat.[3–9] Consequently, UIM students as a group receive lower performance ratings and grades on clerkships compared to non-UIM peers.[3,10,11] Similarly, non-White students receive less favorable Medical Student Performance Evaluation summary descriptors and lower clerkship grades than White students.[11,12] To create more equitable learning environments, it is important to understand the factors which disproportionately affect some students. Despite evidence that some medical students experience racial/ethnic stereotype threat, the ways in which stereotype threat may contribute to inequities has not been well explored.[8,13,14] Stereotype threat is a psychological phenomenon in which members of negatively stereotyped groups worry that they will conform to those stereotypes, a fear which impairs performance.[15–17] Impairment from stereotype threat arises as awareness of the stereotype influences learners' affective, cognitive and motivational states.[18,19] Stereotype threat adversely affects vulnerable individuals across contexts: it has been implicated in the underperformance of women in mathematics, African American and Latinx students on tests of intellectual ability, and the elderly undergoing cognitive tests.[15,20,21] Even subtle context-dependent cues around race/ethnicity can trigger stereotype threat and impair performance.[20] For instance, when told they would be compared to Asian men, White men underperformed on a math examination.[22]

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Because stereotype threat is context-dependent, it is important to understand which aspects of the clinical learning environment trigger stereotype threat in students.

Previous work described how African American and first-generation health professions students' perceptions of racial stereotypes triggered negative emotions, but the implications for their learning and performance were not elaborated.[13] In a recent multi-institutional survey of over 600 fourth-year medical students, UIM students had higher rates of racial/ethnic stereotype threat than non-UIM students (55.7% versus 10.9%). Students with higher stereotype threat earned fewer honors grades.[8] This study did not detail rates or experiences of stereotype threat by specific race/ethnicity. Therefore, we designed this study to (1) determine the prevalence of racial stereotype threat stratified by medical student race/ethnicity, (2) explore student experiences of stereotype threat during clinical rotations. This information can inform efforts to optimize learning experiences for diverse students.

Method

Design

This mixed methods study employed an explanatory sequential design (quantitative survey followed by qualitative interviews) at two institutions in March through May 2019.[23] In Phase 1, we administered the quantitative Stereotype Vulnerability Scale (SVS) to assess the prevalence of racial/ethnic stereotype threat among medical students.[20] In Phase 2, viewing from an interpretivist ontological perspective, we used a qualitative phenomenographic approach to interview students with high SVS scores to explore their experiences around stereotype threat.[24] This methodology enabled us to understand quantitative survey results through individual interviews, explore why students scored high on this measure of vulnerability to stereotype threat, and probe the breadth of personal experiences to understand the phenomenon of stereotype threat in the medical training context.[23]

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This study was approved by the institutional review boards at the University of California, San Francisco and the University of Colorado Anschutz Medical Campus.

Setting and participants

Study institutions were the University of California, San Francisco (UCSF) and University of Colorado Schools of Medicine (CU), both large public institutions. In 2018, the UCSF student body was 33% White, 27% Asian and 27% UIM; faculty were 59% White, 28% Asian and 9% UIM (4% unknown).[25] The CU incoming class of 2018 was 52% White and 28% UIM (20% not reported); faculty were 65% White, 9% Asian and 7% UIM (19% multiracial or unknown).[26] Both schools' Institutional Review Boards approved the study. Eligible participants were all fourth-year medical students at both institutions.

Phase 1: Quantitative survey

Fourth-year students received individualized email invitations from the Qualtrics survey platform to complete a 12-item survey. Non-respondents received up to three weekly reminders. Consistent with our previous study, we used an adapted, five-item SVS tool to assess perceptions of stereotypes about one's race/ethnicity on clerkships (Table 1).[8,20] We eliminated three original SVS items due to double-negative wording which confused students.[8] Seven questions addressed demographic characteristics: gender (2), race/ethnicity using US Census categorizations (2), age (1), first-generation college status (1) and medical school (1).

We calculated descriptive statistics for all demographics. SVS item responses ranged from 1 to 5 (1 = strongly disagree, 3 = neither agree/disagree, 5 = strongly agree). One SVS item was reverse coded, so that a higher score meant more threat. The summed values from the five items created the SVS score (5 to 25). We dichotomized SVS scores with > 15 representing high student vulnerability to stereotype threat ("high threat") and ≤ 15 representing low vulnerability ("low

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threat").[8] Quantitative data were analyzed using STATA 15.1 (Stata Corp, College Station, Texas).

Phase 2: Individual interviews

Individual in-depth interviews allowed us to explore students' feelings and experiences with safety to discuss sensitive, racially/ethnically charged content.[13] Students endorsing high threat and who provided their email address were eligible for interviews. We invited eligible students as they completed the survey. Students received up to three email reminders over two weeks. Two investigators (J.L.B., K.E.H.) developed a semi-structured interview guide based on the literature on stereotype threat.[16–18,20] J.L.B. conducted two pilot interviews to refine the interview guide for clarity and completeness. An inherent tension exists in categorizing students using race/ethnicity terminology due to variable interpretations.[27] Students may share the same racial/ethnic identity but differ in skin color or language(s) spoken. Because we were interested in self-perceptions, the interviewer solicited each participant's self-reported race/ethnicity at the start of the interview and then used that terminology throughout the interview. Interview questions explored students' consciousness of their race/ethnicity during clerkships, how they perceived stereotypes affecting their performance evaluations, and how they perceived their race affected their clerkship experience and performance (see Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/A999). Three trained African American investigators (J.L.B., R.R., A.d.P.J.) interviewed students either in-person or via video conference platform. Interviewees received a $20 electronic gift card. We continued interviews until the research team identified sufficiency with respect to a diverse sample of respondents and variability in experience of stereotype threat.[24,28]

We audio-recorded and transcribed all interviews verbatim, and deidentified transcripts prior to analysis. Our analysis used phenomenography, a qualitative methodology which allows

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researchers to characterize the multiple ways that individuals understand and experience a phenomenon.[24,29] Phenomenography focuses on how these variations in experience relate to one another and involves seven steps of analysis: familiarization, condensation, comparison, grouping, articulating, labeling and contrasting.[24,29]

Two investigators (J.L.B., K.E.H.) reviewed six transcripts to develop a codebook by first generating preliminary codes, and then met to discuss and refine codes. Each coding team member (J.L.B., T.L., A.d.P.J., A.T., K.E.H.) used the draft codebook to code a new transcript individually. After discussion, J.L.B. and K.E.H. again revised the codebook for clarity and to minimize redundancy. J.L.B. read all transcripts before finalizing the codebook (familiarization). Two investigators coded each transcript; J.L.B. coded all transcripts (condensation). We reconciled differences in coding through discussion. Interviews were coded using Dedoose Version 8.0.35 (Los Angeles, California).

Consistent with a phenomenographic approach, we conducted comparison, grouping, articulating and labeling steps iteratively until the entire research team felt that we sufficiently captured the essence in variation of stereotype threat from our interviews. The contrasting step occurred as we synthesized data into themes (below).

We employed several strategies to ensure trustworthiness. Considering reflexivity, the study team included one man and five women of diverse professional roles; three investigators identified as African American, two White, and one Middle Eastern.[30] The coding investigators kept reflexivity journals to record their thoughts, potential biases and emotions prompted by the data; they discussed these reactions with the full study team.[31] After analysis, we emailed synthesized interview results to all interview participants for member checking.[32] Eight participants (44% of interviewees) gave feedback via phone or email. All respondents said that the results accurately reflected their experience. One participant recommended increasing the

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number of quotations related to a particular topic and one corrected the role of a supervisor whom we had mischaracterized.

Results

Phase 1: Quantitative survey assessing stereotype threat vulnerability

Overall, 52% (184/353) of students responded to the survey (Table 2). Respondents' average age was 26.9 (SD = 2.6); 52% (96/184) were women and 26% (48/184) UIM. Demographics and means by school are listed in Supplemental Digital Appendix 2 (at http://links.lww.com/ACADMED/A999). Collectively, 28% of respondents had high vulnerability to stereotype threat; 82% of Black, 45% of Asian, 43% of Latinx, and 4% of White students. On average, Black students scored 17.6 (SD = 2.6) on the SVS, Asians 14.9 (3.3), Latinx 14.3 (4.9) and Whites 8.8 (3.4; Table 2). The mean SVS score for all survey respondents with high threat was 18.3 (1.9).

Phase 2: Qualitative interviews exploring the meaning of stereotype threat vulnerability

We invited 24 students and interviewed all 18 who responded to interview invitations. Interviewees had an average SVS score of 18.6 (SD = 1.7); 11 (61%) were women. Nine self-identified as Black, two Latinx, three Middle Eastern, three Asian and one multi-racial. Interviews lasted an average of 40 minutes (range 29–50 minutes). Interview findings were consistent across institutions.

Interviewees described stereotype threat as a dynamic process influenced by their internal and external environment, rather than a static fear of stereotypes. We developed the Clerkship Student Stereotype Threat Model which characterizes the phenomenon of stereotype threat into three stages (Figure 1). (1) Triggering: participants described how standing out because of their race/ethnicity, previous experiences or microaggressions caused them to experience the workplace through a colored lens of race/ethnicity, triggering stereotype threat. (2) Internal

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dialogue: students spent substantial energy processing these triggering events. Their internal

dialogue around how to navigate racially/ethnically charged events and power dynamics in the

environment interfered with clinical learning. (3) Response: students described how they

responded and coped to withstand threats during their clerkships. While responses to these

experiences varied, students rarely confronted triggers directly. At times, patients and providers

served as allies and through their actions, helped to decrease students' stereotype threat. We

describe findings below with participant number and race/ethnicity in parentheses. We conclude

with findings regarding allies.

A colored lens. Race/ethnicity was omnipresent in day-to-day activity of participants and served

as a colored lens through which students viewed their experiences and others seemed to view

them. Students were continually prompted to consider their race/ethnicity because they stood out

due to the absence of others who looked like them, recalling their past experiences,

intersectionality of race/ethnicity with other identities, and frequent microaggressions.

From a clerkship's start, students received cues from the learning environment that they stood

out, cues which triggered feelings of stereotype threat. One staff told a student: "They don't see a

lot of people my color in this area." (18-Black) One student described a patient fixating on her

identity by asking, "'What kind of a name is that? Where are you from?' I was like, 'Well, I

grew up here.' 'No, but what are you?'" (11-Middle Eastern). Students felt this lack of

representation negatively affecting them: "If I notice that I'm one of the few people of my race

or ethnicity … I start feeling self-conscious about myself and how I present to others." (3-Asian).

For some students, the salience of race and ethnicity engendered an internal pressure to represent

their group well. They felt compelled to work harder than other students and be more thorough.

Students felt burdened to not only showcase their capabilities but also combat others' biases.

Students acknowledged that their experiences around race/ethnicity differed based on their skin

tone. While students with lighter skin avoided some race-based interactions, they still experienced substantial racial/ethnic stereotype threat.

Past experiences around race/ethnicity could trigger stereotype threat. One student described how he suffered from stereotype threat despite an overall pleasant clerkship experience because he previously had negative educational experiences relating to his ethnicity: "You're getting in because of affirmative action … I've internalized those stereotypes of intellect … But fortunately in medical school I haven't had those experiences be brought up in a threatening or demeaning way." (10-Latinx) Despite this rationalization, the student continued to believe that others thought less of him as a medical student.

The coexistence of race/ethnicity with other identities held by students highlighted the phenomenon of intersectionality: how distinct marginalized identities interact. Intersectionality of race/ethnicity with gender, class and sexual orientation were most commonly mentioned. Most women participants described experiencing the intersectionality of race/ethnicity with gender. Recalling written feedback describing her as combative, one said, "I can only attribute it from the trope of an angry Black woman" (1-Black) Many participants revealed how even seemingly innocuous conversation about weekend plans could trigger feelings of mis-belonging due to intersectionality of race/ethnicity and class: "Attendings talk about skiing, golfing, all these things … I just can't relate to it, because I didn't grow up doing any of that." (15-Black). Intersectionality prompted questions: "Which part of me are they responding to today?" (4-Asian)

Microaggressions. Microaggressions featured prominently in the experience of stereotype threat and typically came from supervisors or patients. Microaggressions were ubiquitous and often subtle, in the context of complex and rapid interactions. Multiple students shared that some supervisors used feedback discussions to convey racist opinions. One resident's feedback was

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that the student was not fitting into his team's culture. The student interpreted that it was "White professional culture that [the resident] was talking about." (9-Asian) Another student interpreted an attending's feedback about professionalism as coded language for needing to talk "less ethnic." (3-Asian) Students felt activated around race when patients made comments addressing student identity or tried to prevent minority trainees from caring for them. At times, racism felt salient to students, but they felt it was overlooked by others around them. Ultimately, as one participant acknowledged, "You're dealing with all these passive-aggressive microaggressions that are just literally everywhere." (15-Black)

Sometimes, supervisors made egregious comments. Referring to a Black patient who had survived multiple complications, one student quoted a supervisor saying, "'Our patient is like a cat, they must have nine lives or something. Or no, maybe more like a cockroach.' … And I don't think it's a far leap to say 'if you view a patient that way. Like, what do you think of me?'" (8-Black) Students were negatively affected by vicarious threats while overhearing aggressions committed against other minority students. Referring to her Middle Eastern peer, one student said, "Even though I'm Black and there's a whole bunch of perceptions around that, I've never been called the 'n' word, but she gets called a terrorist." (16-Black)

Internal dialogue. Students engaged in extensive internal dialogue to interpret motivation behind offensive interactions. Even when offended by an interaction, many students doubted their emotional reaction: "There's always that, like, was it a microaggression? ... Am I just being too sensitive? Am I just too tired?" (8-Black) Students pondered whether they were simply projecting their own feelings onto others: "Sometimes I wonder if they think I'm not as capable, or not as smart. I don't know if that's me projecting on myself too." (15-Black) Processing whether and how to respond, participants considering power dynamics, assessment and grading, and the personal emotional impact of experiences.

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Power dynamics featured prominently as students perceived themselves as both minorities and students positioned at the bottom of the medical hierarchy. Hierarchy influenced students' decision to respond to threats from supervisors and patients. Students often expected their supervisors to respond in their defense; this support usually did not manifest. Sometimes, supervisors responded unfavorably. One student recalled how a patient said to her, "'I had these Iranian neighbors that, Lord knows, maybe they're spies.' And I remember my resident laughed at that comment." (12-Middle Eastern) Students observed many events triggered by, or witnessed by, attending physicians. Attendings' elevated position in the hierarchy diminished students' empowerment to respond. One decided whether to respond by assessing whether a threat arose "from a top person … If I need something from them, then I'm hesitant to respond." (13-Black) Students debated how to respond to microaggressions while simultaneously juggling pressures of assessment and grading, and their responsibilities for patient care and learning. After weighing the consequences of responding, many concluded that the most expeditious resolution was silence: "I just wanted to be quiet and get out." (18-Black) Students commonly refrained from responding to avoid jeopardizing their evaluations or grades: "I didn't say anything. And I wish I had, but like at the time I was like, 'Oh no, your career's on the line.'" (8-Black) Interviewees believed that threats detracted from their educational experience and performance by adding an extra load onto already taxing clerkships. One student explained their thought process:

> It was so stressful to get these comments … Do I want to give an
>
> answer that's going to appease them and maintain a good
>
> relationship? … it's a big loaded question when I'm trying to think
>
> of the differential for altered mental status. (2-Latinx)

Students felt disadvantaged on clerkships compared to White peers who did not have to think about these issues. One student compared his experience to "a White student who doesn't have to

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constantly survey. And they can probably think about what they're supposed to be thinking about." (13-Black)

The emotional impact of negative interactions became apparent as multiple students cried during study interviews. Students used charged words to describe their feelings: "shocked," "dehumanized," "bothered," "isolated," "powerless," "sad," "disrespected" and "singled-out." Reflecting on a conversation in which some classmates implied that more Black men did not deserve to be in their medical school, "It kind of sometimes makes me have that imposter syndrome … [begins to cry] … the feelings of just 'do I deserve to be here?' were really profound." (15-Black) One participant described an attending mischaracterizing the culture of the student's Middle Eastern country; when the student attempted to correct him, the attending persisted. "I couldn't stop thinking about it even though ... I kept telling myself it's not a big deal." (14-Middle Eastern)

Responding and coping. Students showed resilience using multiple coping mechanisms to mitigate stereotype threat. They often tried to work within the system to navigate microaggressions, while also staying true to themselves and their purpose. There was large heterogeneity in how students managed threats. Some who came from undergraduate institutions with predominantly White students felt armed with pre-existing coping strategies. Participants used a variety of techniques, including avoidance, prevention, deferral and confrontation to manage threats (Table 3).

When students sensed that minority patients were receiving poorer quality care than others, they described shouldering the burden to provide care surreptitiously or reassure patients independently. These efforts entailed spending more time with patients, speaking with them in their native language, or helping to coordinate appointments. Students felt empowered and

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inspired to improve patient care through these unique contributions. Some cited these interactions as the reason they went into medicine and a primary driver to persevere.

Allies. When asked where they felt safe, some students shared instances in which supervisors responded in ways that reduced their stereotype threat. Some supervisors served as allies who created a safe environment by reducing the threat after a negative race-related incident. Table 4 shows examples of supervisor responses that students found effective: drawing the line for patients, reassuring patients, correcting misconceptions, creating a teaching moment and reflecting afterwards. Each of these techniques promoted students' feelings of safety. Minority providers and patients served as allies who provided strength and positivity for many participants to continue to push forward despite stereotype threat. Multiple students emphasized the importance of members of their race to increase the number of potential allies. "Residents that are of color, they get the struggle. They take that extra time to just see how you're doing or give that extra hand of encouragement." (15-Black) Minority patients also affirmed students. One patient said to a student, "You got to keep doing this, you can't fall off the path." (8-Black) Students felt their own resolve buoyed by allies' support.

Discussion

Our study found that racial and ethnic stereotype threat is a widespread, dynamic and consequential process for minority clerkship students. This study corroborates and expands upon previous work exploring stereotype threat among African American doctoral and health professions students.[13,33] Many racial and ethnic minority students, not just UIM students, suffer from racial/ethnic stereotype threat. Strikingly, over 80% of our Black respondents and almost half of Latinx and Asian respondents were highly vulnerable to stereotype threat. Middle Eastern students, considered White by United States census definitions and not specifically categorized in our quantitative survey, also emerged as highly vulnerable to stereotype threat.

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Our interviews revealed the numerous and pervasive ways that stereotype threat negatively affects medical students' learning experience and performance. Below, we use cognitive load theory and critical race theory to examine students' experience with race/ethnicity and the impact of stereotype threat. Effective interventions from allies subjectively reduced stereotype threat among our participants.

Cognitive load theory (CLT) highlights how stereotype threat can impair student performance. According to CLT, learners have finite working memory capacity which must accommodate the intrinsic load (task difficulty), extraneous load (distractors which consume working memory but do not help accomplish the task) and germane load (working memory to process a challenging task).[34,35] Consistent with prior studies in fields outside medical education, our results suggest that stereotype threat depletes students' working memory by increasing extraneous load.[17,36,37] Participants commented on their increased extraneous load due to stereotype threat—that is, thinking about race at the expense of clinical reasoning—and frequently felt disadvantaged because White students did not have to contemplate these same issues. This finding can contribute to the performance degradation previously observed with stereotype threat in clinical medical students.[8] For some interviewees, increased cognitive load persisted long after the initial threat ended. Learning is optimized when trainees perceive psychological well-being; our trainees felt emotionally depleted by stereotype threat.[38]

Students described many key tenants of Critical Race Theory (CRT) as they described the omnipresent, racially/ethnically colored lens that triggered stereotype threat.[39] CRT, a critical pedagogy, argues that racial disparities exist because society is fundamentally racist and is organized to perpetuate those disparities.[40] CRT views racism as a structural and endemic problem in education. CRT, and our students' stories, describe how microaggressions, intersectionality, and Whiteness as property (e.g., White professional culture as the desired

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medical culture) perpetuate racial disparities in performance.[40] Microaggressions are important initiators of, but distinct from, stereotype threat. Any reminder of race/ethnicity can trigger stereotype threat.[17] Racial/ethnic microaggressions by definition are directed to one's racial/ethnic group and therefore cause racial/ethnic salience.[41] However, standing out due to lack of representation and students' previous life experiences also trigger stereotype threat without microaggressions. The interrelationship between microaggressions and stereotype threat highlights a need to explore stereotype threat among other student groups which commonly face microaggressions such as women and LGBTQ students.[42]

CRT explores the way that power impacts educational disparities. This prompts the question of how medical educators can empower trainees to respond to triggers to mitigate their stereotype threat and also how they can be better allies.[40] Because the medical hierarchy weighed so heavily, students often avoided conflict in the face of a triggering event and relied on others to speak up. When allies intervened on a microaggression, students perceived less threat – they no longer had to question whether something was a microaggression or how to respond, nor did they continue to feel isolated. Allies decreased the salience of negative stereotypes and students' pressure to disprove them. This finding highlights the need to move beyond simply identifying microaggressions: we must generate evidence-based solutions to respond to microaggressions and then train faculty and residents on how to do so.[43–45]

This study has limitations. We used self-report data with a survey response rate of 52%: it is possible that students more affected by stereotype threat were more likely to complete the survey and therefore we may overestimate the prevalence of stereotype threat. Conversely, because stereotype threat can be unconscious, we may underestimate its prevalence.[20] This study was conducted at two medical schools and results do not represent the experience of all medical

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students who experience racial/ethnic stereotype threat. It is unclear how well our results generalize or transfer to other schools.

Conclusions

This study highlights a prevalent and concerning phenomenon amongst minority medical students. Respondents shared many ways in which stereotype treat distracts from their clinical learning, and also showcased their strength, perseverance and coping skills. To mitigate the negative effects of stereotype threat, there is a critical need to increase minority representation at all levels of the medical pipeline, equip supervisors to respond to microaggressions and avoid perpetrating them, and train all students and faculty as allies.

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Figure Legend

Figure 1

Clerkship Student Stereotype Threat Model: Stereotype threat was a three-stage process in which a student was first triggered by race, next spent substantial cognitive resources to understand and then decide how to best respond to the trigger and finally responded to that trigger. Interventions from allies helped to mitigate stereotype threat.

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Table 1
Adapted Stereotype Vulnerability Scale[a]

Stereotype Vulnerability Scale item	Overall item response, mean (SD)[b]
During clerkships, my evaluators expected me to do poorly on clerkships because of my race/ethnicity.	1.9 (1.1)
Clerkships may have been easier for people of my race/ethnicity.[c]	3.1 (1.3)
Some people feel I have less medical ability because of my race/ethnicity.	2.2 (1.2)
On clerkships, people of my ethnicity often face biased evaluations from others.	2.8 (1.3)
In medical school, I often feel that others look down on me because of my race/ethnicity.	2.3 (1.2)

Abbreviation: SD, standard deviation.

[a]The authors adapted and administered the Stereotype Vulnerability Scale (SVS) to assess racial/ethnic stereotype threat among medical students at two medical schools in 2019.[8,20] A higher score is consistent with more vulnerability to stereotype threat. The individual score from each item was summed to make a total SVS score. Score greater than 15 was categorized as "high threat."

[b]Items were scored on a Likert scale ranging from Strongly Disagree =1 to Strongly Agree=5.

[c]Item was reverse coded as higher score means more stereotype threat. Listed score is the reverse coded score.

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Table 2

Demographic Data for Survey Respondents (n = 353) and Mean Stereotype Vulnerability Scale Scores by Group for Fourth-Year Medical Student Survey Respondents at Two Medical Schools in 2019[8,20]

Characteristic	Survey respondent demographics, no. (%)	Stereotype Vulnerability Scale score, mean (SD)[a]
Overall response rate	184 (52.1%)	
Overall mean score		12.3 (4.8)
Mean age, years (SD)	26.9 (2.6)	-
Gender		
Female	96 (52.2%)	11.9 (5.1)
Male	88 (47.8%)	12.7 (4.5)
Race		
African American	17 (9.2%)	17.6 (2.6)
Asian American	38 (20.7%)	14.9 (3.3)
Caucasian[b]	91 (49.5%)	8.8 (3.4)
Native	2 (1.1%)	15.0 (0)
Multi-racial	21 (11.4%)	11.8 (4.1)
Other/prefer not to answer[b]	15 (8.2%)	14.7 (3.2)
Other characteristics		
Latinx/Hispanic	30 (16.3%)	14.3 (4.9)
Underrepresented in medicine[c]	48 (26.1%)	15.5 (4.4)
LGBTQ	36 (19.6%)	12.7 (5.0)
First generation college student	46 (25.0%)	15.0 (4.1)
High threat[d]	52 (28.3%)	18.3 (1.9)

Abbreviations: SD, standard deviation; LGBTQ, lesbian, gay, bisexual, transgender and queer or questioning.

[a]Stereotype Vulnerability Scale (SVS) has 5-items rated converted from a strongly agree to strongly disagree Likert scale to an item score of 1 to 5 on a for a total scale score of 5 to 25.

[b]Middle Eastern was not listed on the survey as a separate racial/ethnic category. Middle Eastern students self-identified as "Caucasian" or "Other."

[c]Underrepresented in Medicine: Refers to students who self-identify as African American/Black, Latinx/Hispanic, Native American, American Indian, Native Hawaiian or Alaskan Native.

[d]High threat: Students score on SVS score was greater than 15.

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Table 3

Students' Response to a Perceived Threat: Strategies or Behaviors Used by Students to Respond to or Cope With an Event That Triggered Stereotype Threat as Described by Students in Qualitative Interviews at Two Schools in 2019

Response	Description of student thought or behavior	Example
Avoidance	Either feeling paralyzed to speak up or simply deciding to not respond to a perceived threat.	"I think I've also learned to just, for my sake, not ask too many questions. Because, sometimes it's better to just feel confident in that I'm here." (6-Multiracial)
Denial	Recognition of a potential threat to their identity but rationalizing the perpetrator's behavior or feature of the environment by doubting the reality of the situation.	"They probably get a ton of black students, or hopefully get some black students, but there were definitely no black physicians. I maybe saw a couple black patients, I believe. I hope, but I'm actually not certain of that." (5-Black)
Prevention	Efforts to fit into the culture of medicine. Some described trying to fit into dominant culture by pronouncing their name as more 'Americanized' when introducing themselves, changing their dress, speaking differently or working harder to disprove stereotypes.	"I have a wonderful friend of mine who is African American and she and I, we talk a lot about ... She and I definitely overdress for our rotations ... she says, 'If I don't dress up, people are gonna mistake me for the janitor.' And so she and I, we definitely always overdress." (12-Middle Eastern) "I think when I first heard them say that I couldn't do the work, I actually ... It made me want to work harder." (17-Black)
Deferral	Responding to the threat later. Some students sought support from external resources, such as a therapist, partner, or school diversity staff. Others documented the threatening behavior they had experienced in their formal evaluation of supervisors, particularly when they felt someone's behaviors were inappropriate and based on the student's or a patient's race.	"I started therapy during third year, I should have started earlier, but third year was too much. So I really needed a therapist. I got a black gay therapist .... What I learned at least for me personally, is that I will turn my wheels trying to figure out is what someone did was homophobic or racist…there were instances that I would bring to my therapist and I'd be like, 'Was this racist, was this homophobic?' And he'd be like, 'Well, what other explanations do you have?'" (7-Black)
Confrontation	Directly challenging the threat. When students directly confronted supervisors or patients, they typically did so in ways that they anticipated would be well-received. Strategies including using a friendly tone, asking questions rather than making declarative statements, or using jokes to decrease tension.	"Especially with older white men. I feel like if I am really blunt and aggressive, I think that they will really take it the wrong way and find it threatening for their position of power." (2-Latinx)

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Table 4
Supervisors Creating a Safer Clinical Learning Environment Through Allyship: Scenarios
Described by Students During Qualitative Interviews at Two Schools in 2019 About
Stereotype Threat in Which Supervisors Helped to Promote a Safe Learning Environment
by Appropriately Intervening Upon a Threatening Situation Either During or After the
Trigger

Supervisor strategy to mitigate threats and demonstrate allyship	Description	Example
Drawing the line	Making it clear to patients what was or was not acceptable behavior	A patient's parents did not want a black medical student and Indian American resident caring for their child. The student observed the attending physician telling the family: "'This is a teaching hospital. Student doctor XXXX, and Dr. XX are qualified to be here. It is part of their job to be here. This is your treatment team. If you would like to receive care here, you can stay and receive care. But requesting specific providers is not acceptable. If you're not happy with it, you can leave'" (16-Black)
Reassuring	Reassuring patients that they were in good hands as minority trainees cared for them.	A resident placing a central line was being supervised by a fellow. The patient said an inappropriate comment about the resident, and the student perceived that the patient didn't want the resident to do the procedure because of his race. The student recalled the fellow picking up on the situation and responding: "'Sir, this is our resident. He will be doing the procedure and I will be overseeing it. And you are in good hands.'" (2-Latinx)
Correcting misconceptions	Clarifying racial misconceptions made by others in the learning environment	An intern commented to the team, "Yeah, he's Mexican but he sure looks hella white, and doesn't look Mexican at all." The resident responded, "You know, not all Latin people look the same or have the same skin color," to which the student replied, "Yeah, that's totally right." The student commented that because the resident responded first, she felt safe to say something. (15-Black)
Creating a teaching moment	Using a microaggression or overt aggression as an opportunity to teach the entire team about checking biases	A junior resident implied to a student that a mother was neglecting a pediatric patient due to her substance use history. The senior resident stepped in and said "I think it's really important to think about why you think this patient's mother is neglecting this child. What did she tell you specifically that made you think that she's neglecting her child?" The junior resident was unable to name anything aside from the substance use history. The senior resident made a point to the team that, "It's really important to check these biases when you talk to patients because it really

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		affects the care that they get in the hospital … It's important to know the history, but at this present time, she's not currently using drugs … I don't think it needs to be an important part of this hospitalization." (16-Black)
Reflecting afterwards	After a missed opportunity to intervene on a microaggression, returning to the episode later and reflecting on that microaggression	A student recalled how a patient commented on the appearance of the student, and no one responded in the moment. The next day the attending told the team: "It's a small thing that maybe I initially wasn't able to call out why it was bothersome, but it is bothersome. These things add up and I want to talk about it." The team discussed their different experiences in a non-judgmental way and shared various ways to deal with microaggressions. (11-Middle Eastern)

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Figure 1

Triggered by the colored lens of race/ethnicity
- Standing out
- Past experiences
- Intersectionality
- Microaggressions

Internal dialogue
- Power dynamics
- Assessment/grading
- Emotional impact

Response
- Avoidance
- Prevention
- Deferral
- Confrontation

Allies
- Drawing the line
- Reassuring
- Correcting misconceptions
- Creating a teachable moment
- Reflecting afterwards