

Looks matter when it comes to success in STEM, study shows

March 5 2019



Mikki Hebl, the Martha and Henry Malcom Lovett Chair of Psychological Sciences and Professor of Management at Rice University. Credit: Jeff Fitlow/Rice University

Demand for science, technology, engineering and math (STEM) degrees is on the rise. However, there are many barriers to gaining one.

One may be the appearance of the [student](#) seeking the degree, according to a new Rice University study. The extent to which students look racially stereotypical—that is, more or less like members of their racial group—influences how likely they are to persist in a STEM-related field.

"The Face of STEM: Racial Phenotypic Stereotypicality Predicts STEM Persistence by—and Ability Attributions About—Students of Color" appears in the *Journal of Personality and Social Psychology*.

Researchers Mikki Hebl, the Martha and Henry Malcom Lovett Chair of Psychological Sciences and Professor of Management at Rice; Melissa Williams, Goizueta Foundation Term Associate Professor of Organization and Management at Emory University; and Julia George-Jones, Ph.D. candidate in Educational Psychology at the University of Texas at Austin, were not interested in looking at differences across races. Rather, they were interested in focusing on differences within races.

Examining five years' worth of students who entered college intending to pursue a STEM degree, the researchers measured their persistence at remaining in a STEM discipline. They coded photos on the extent to which students exhibited physical features considered stereotypical for

their races (white, black or Asian).

Using logistic regression analysis, the researchers found that Asian students who looked more (versus less) racially stereotypical were significantly more likely to complete a bachelor's degree in STEM. However, [black students](#) who looked more racially stereotypical were less likely to complete a STEM degree. There were no meaningful differences reported for [white students](#).

"I think we live in a presumed meritocracy where people believe what you get on tests and how you do in the classroom is what matters," Hebl said. "Our research says that your looks do matter and can impact your likelihood to depart or remain in a STEM field. And that is pretty shocking."

In an attempt to identify the source of such biases, the researchers invited academic advisers from 50 top U.S. universities to participate in a follow-up study. Advisers were shown two photos (one higher and one lower in stereotypicality but always of the same race and gender) and told to recommend which of the two should take a STEM-related class.

The responses were consistent with the findings in the first part of the study. Advisers were considerably more likely to choose Asian male and female students who looked more stereotypically Asian to take the STEM class. Advisers were less likely to choose those who looked more stereotypically black among women.

The researchers found one inconsistency with the earlier findings: The pattern that academic advisers showed for black women did not extend to black men. That is, the advisers were more likely to say that a black male with a more (versus less) stereotypical appearance would be more successful in STEM. Hebl thinks a possible cause that this finding emerges because of heightened sensitivities to black men in the current

political culture and movements such as #BlackLivesMatter. She suggested very stereotypical black men may have led participants to double check their behavior.

"We have some evidence that the extent to which people tried to suppress their motivation to be prejudiced predicted their responses to black men, but only to them," Hebl said.

When the researchers controlled for the motivation to control prejudice, indeed they found that the pattern for black men resembled the pattern for [black women](#)—that is, the less-stereotypical face led to perceptions of greater STEM ability.

Nevertheless, the researchers are encouraged by this finding.

"We think it may demonstrate that some level of awareness about biases exist, and individuals are capable of altering their actions. Whether it is [political correctness](#), a true change of heart or something in between, a change of behavior is possible," Hebl said.

Hebl has been examining the construct of stereotypicality for nearly 10 years. Motivated by the findings of a 2006 Stanford study that showed black men were more likely to get the death penalty if they look more (versus less) racially stereotypical, Hebl began research to identify other outcomes potentially linked to stereotypicality. In 2010, she published research that showed one's level of stereotypicality is negatively correlated with the size of that person's social network. That is, she found that those who look more stereotypical of their race (unless they are white) are less likely to have as large a social network and be as central within it.

The authors of the STEM study said they don't think society and researchers have done enough to understand how differences within

racism, versus between races, lead to different outcomes.

"This study is important because it raises awareness about how decisions based on stereotypes can amount to very real negative outcomes for STEM students," the authors wrote. "We hope that by bringing attention to this topic, it will create ripples of awareness and behaviors that lead to more authentic, meritocratically based outcomes."

More information: , "The face of STEM: Racial phenotypic stereotypicality predicts stem persistence by—and ability attributions about—students of color": Correction to Williams, George-Jones, and Hebl (2018)., *Journal of Personality and Social Psychology* (2019). [DOI: 10.1037/pspi0000185](https://doi.org/10.1037/pspi0000185)

Provided by Rice University

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