

Want black women students to stay in STEM? Help them find role models who look like them

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Representation matters for Black women college students when it comes to belonging in rigorous science, technology, engineering and mathematics (STEM) programs, according to a new study. Having role models who share their racial identity is vital to signaling a sense of belonging for women of color college students.

"Women who feel like they belong are more likely to enter and stay in STEM, so lack of belonging may be one reason for women of color's lack of representation," said Eva Pietri, Ph.D., second author on the paper and assistant professor of psychology at IUPUI.

While women of color college students report interest in STEM majors at an equivalent rate as White women students, they remain the least represented group in STEM. Women of color account for a small number of bachelor's degrees across STEM fields with only 2.9% awarded to Black women, 3.6% to Latinas and 4.8% to Asian women in 2014-2015, according to the National Center for Education Statistics.

"Black and Latina women are among the most underrepresented groups in STEM, which means these disciplines are losing potentially talented workers, who can contribute important and new perspectives," said India Johnson, Ph.D., first author on this paper, IUPUI alumna, and assistant professor of psychology at Elon University.

As women of color researchers, Johnson and Pietri found this issue personally relevant, and wanted to explore what environmental factors would predict a sense of belonging among Black women in STEM.

In their first study, researchers presented Black female students recruited from across the country with a fictional school of science and technology. The students, next, either viewed a profile for a professor who was either a Black female or Black male scientist or White female or White male scientist. Researchers found that the students anticipated more belonging and trust at the school when they saw that a Black man or woman scientist was working there opposed to a White woman or man scientist. The Black woman scientist, however, was particularly beneficial for Black female participants who were high in stigma consciousness—or those who are concerned about their gender and race being devalued in society.

"High levels of stigma consciousness related to less anticipated belonging and trust, unless Black female students saw a Black woman scientist at the school," Pietri said. "This first study suggests that having [role models](#) who match their race and gender, or at least race, is beneficial for Black women [student's](#) belonging."

In a follow-up study, the researchers recruited Black women STEM majors at two very different universities. Specifically, they surveyed Black women STEM students from a predominately White four-year college and a women-only historically Black college. The two colleges were chosen to ensure there was variability in access to role models of different identities.

The researchers found that the women at the historically Black college had approximately two to three Black female role models, whereas the women enrolled at the primarily White institution had zero to one. Across both samples, the higher number of Black female and Black male

role models the students had, the more belonging they felt at their institutions, again, highlighting the importance of access to Black men and Black women role models. At the same time, the researchers also found important implications for perceiving role models as allies and belonging in STEM.

"We found that having role models, who were not Black women, but who the STEM majors believed were allies related to higher belonging in STEM," said Johnson.

Like Study 1, the researchers again found stigma consciousness had important implications for belonging. Higher stigma consciousness related to less belonging in STEM for women at the primarily White institution. However, for women at the historically Black institution, higher stigma consciousness did not harm belonging in STEM but instead correlated with more belonging at their institution.

"Under the right conditions, greater stigma consciousness might be beneficial," Johnson said. "These results show that we don't necessarily want to decrease it, but we want to create environments where it's not detrimental. We find stigma consciousness can even be helpful when there are a lot of Black female role models and supportive allies available."

Although increasing representation of women of color in STEM is the best way to improve belonging, the researchers hope to build tools to help white men or white women become better allies for women in STEM.

"Allies can play a really big role in increasing belonging among [women](#) of color, but they have to really clearly signal their allyship through actions and behaviors," added Pietri.

More information: India R. Johnson et al, Exploring Identity-Safety Cues and Allyship Among Black Women Students in STEM Environments, *Psychology of Women Quarterly* (2019). [DOI: 10.1177/0361684319830926](https://doi.org/10.1177/0361684319830926)

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