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IMPROVING MATH SCORES FOR AFRICAN AMERICAN AND HISPANIC FEMALES

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Being at risk of confirming a negative stereotype about one's group, known as "stereotype threat," can harm academic performance and contribute to achievement gaps among racial groups and between males and females in math. African American and Hispanic females experience the burden of both race and gender minority status, which has been linked to their underrepresentation in STEM fields: Science, Technology, Engineering, and Mathematics.

A Randomized Controlled Trial (in which students were randomly assigned to treatment and control groups) tested whether a series of self-affirmation writing exercises designed to reduce stereotype threat could improve students' standardized test scores in math, a subject often considered a barrier to entry into STEM fields. The intervention was tested among 9th grade students in three high schools

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in the district. Although differences between treatment and control group test performance were insignificant, the intervention had a significant effect on PSAT performance for students in the AP/IB and pre-AP/IB track.

RESEARCH QUESTIONS

1. What is the effect of the intervention on the 9th-grade standardized math performance of:
    a. Females?
    b. Hispanics?
    c. African Americans?
    d. Hispanic and African American females?

KEY FINDINGS

- Overall, the intervention was not found to have any appreciable effect on the math performance of any of the groups of interest listed above.
- However, AP/IB and pre-AP/IB students who received the intervention performed significantly better on the PSAT math exam than their AP/IB and pre-AP/IB peers in the control group.

LIMITATIONS

One major limitation of this study is the sample size in wave 1 (the PSAT math exam). Staff at the high school with the largest proportion of African American students in the sample did not administer the intervention prior to administration of the PSAT math exam. Thus, analyzing the effect of the intervention on African American students' PSAT scores is impossible, as the wave 1/PSAT sample is limited to white and Hispanic students at the other two high schools in the sample. Additionally, the front page of the control group's exercise was incorrectly printed, such that this group received a small "dose" of the treatment in wave 1. Interestingly, this makes the PSAT math results by track all the more remarkable, as the AP/IB and pre-AP/IB students in the treatment group still outperformed their AP/IB and pre-AP/IB peers in the control group, despite the control group's access to this small dosage.

SUMMARY AND SUGGESTIONS

The self-affirmation writing exercises designed to reduce stereotype threat were only effective for AP/IB students. AP/IB students who received the intervention

scored significantly better than their AP/IB peers who did not receive the intervention, and this difference can be attributed to the intervention because these students were randomly assigned to treatment and control groups. This suggests that interventions of this type may be most beneficial for higher-achieving students. Future such interventions should account for this possibility and target racial minority and female students in higher tracks in order to boost their achievement in math. Doing so may alleviate stereotype threat for these students who, while likely benefiting from placement in an advanced academic track, may still experience the burdens of race and gender stereotypes, particularly in math and other STEM fields.

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