What Exactly Is Drawing Young Women Away From STEM Fields?

We consistently hear about the need to educate and recruit more young Americans for careers in the science, technology, engineering, and mathematics (STEM) fields. Young women and girls are failing to follow STEM pathways in the same numbers as young men and boys, and the million dollar question is: Why?

Numerous research studies have tried to explain the dearth of women in these fields. Some suggest that women simply aren't as able as men when it comes to mathematics. Others suggest that women don't identify with mathematics, have a lack of interest in mathematics, or hold different lifestyle values. Although insightful, these studies do not offer a clear understanding of what it is that is pushing capable young women away from secure and potentially lucrative STEM careers.

The research we've done at the University of Pittsburgh and University of Michigan suggests that there is a pre-existing pool of individuals with both high math and high verbal abilities. Unfortunately, these individuals seem to be more likely to choose careers outside of science because their combination of skills provides them with more career options to choose from. Notably, we found this group to contain more females than males.

We studied 1,490 senior high school American students who were college-bound, evaluating them based on SAT scores, motivational beliefs, and other values such as family needs and how much passion they had for a career. These same people were interviewed again at age 33 once they were settled into the workplace.

Perhaps unsurprisingly, we found that certain mathematically skilled students let classroom success guide them into their future careers -- landing themselves in STEM occupations that tapped into these skill-sets. However, we found that these were primarily students who had high math and only moderate verbal skills. These students self-identified with math over verbal domains, and their careers followed suit. This was especially the case when compared to those with the combination of high math and high verbal abilities.

According to our research, females are more likely than their male counterparts to find themselves in the fortunate position of being able to consider multiple career paths. This leaves us wondering: what exactly is drawing young women -- specifically those with the combination of high math and high verbal skills -- away from STEM fields?

Previous research suggests that STEM fields are perceived by women as being object- or thing-oriented, male-dominated, and not family friendly -- issues that have yet to be addressed on a meaningful level. Educators and policy makers tend to focus on strengthening girls’ math ability at earlier ages. However, this may be missing the point. Instead, we need to consider tapping into the already-existing potential of those females who are both mathematically and verbally skilled. One way might include increasing math- and verbal-capable women's self-identification with mathematics. Likewise, we need to ensure that females are well informed as to the diverse range of options available in various STEM careers. For example, it is important to convey to young people, particularly females, that math and science careers have a beneficial impact on wider society and do allow one to work with other people. This would allow math-competent females to better evaluate the utility and cost of these careers in terms of their personal goals and values. Exposing math- and verbal-capable females to STEM role models during secondary school may also combat attrition from STEM fields due to misinformation or stereotypes.

Finally, we suggest that it is time to reframe the STEM gender debate. Instead of focusing on what girls don't have when it comes to mathematics, we need to focus on what they do have, and how to tap into it. It is up to educators, policymakers, and employers to make the STEM pathway, at all stages, more welcoming to women and girls. Until this happens, we cannot be surprised that millions of math-capable females continue to opt for non-STEM careers, in which they are equally able to excel.