

Kids, teens believe girls aren't interested in computer science, study shows

November 22 2021



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Children as young as age 6 develop ideas that girls are less interested than boys in computer science and engineering—stereotypes that can extend into the late teens and contribute to a gender gap in STEM

college courses and related careers.

New research from the University of Houston and the University of Washington, published the week of Nov. 22 in the *Proceedings of the National Academy of Sciences*, explores the gender-based beliefs [young children](#) and teens hold about interest in STEM fields. The majority of children believe girls are less interested than boys in [computer science](#) and engineering, the study shows.

"Gender-interest stereotypes that STEM is for boys begins in grade school, and by the time they reach [high school](#), many girls have made their decision not to pursue degrees in [computer science](#) and engineering because they feel they don't belong," said Allison Master, an assistant professor of Psychological, Health and Learning Sciences at the University of Houston and the study's lead author.

The PNAS study involved four different studies—a mix of surveys and designed experiments to capture the beliefs of a racially diverse sample of children and teens in grades 1 through 12. Researchers wanted to focus on interest, building on [past studies of stereotypes about ability](#), to learn how gender-based stereotypes about who *likes*—not just who is "good" at—computer science and engineering can affect a child's sense of belonging and willingness to participate. Such information can influence a young person's motivation over the long term, researchers point out, and may deter them from trying an activity or taking a class.

As recently as 2019, national statistics reveal that women are underrepresented in some popular and lucrative STEM careers: [United States Census Bureau](#) statistics show that only about 25% of computer scientists and 15% of engineers were women.

In the first two studies, researchers surveyed more than 2,200 children and teens to gauge beliefs about computer science and engineering. The

surveys used terms and phrases with which the students were familiar at school, such as "computer coding" for computer science or, for engineering, "designing and creating large structures such as roads and bridges."

Researchers found that just over half (51%) of children believed girls are less interested than boys in computer science, and nearly two-thirds (63%) said girls are less interested in engineering. In comparison, 14% of children said girls are more interested than boys in computer science, and 9% said girls are more interested in engineering.

Subsequent lab studies provided a smaller sample of children two different activities from which to choose. The results demonstrated that girls were significantly less interested in a computer science activity when they were told boys were more interested in it than girls (35% of girls chose the activity), compared to one they were told boys and girls were equally interested in (65% of girls chose that activity).

While the surveys showed the pervasiveness of gender-based stereotypes around interest in computer science and engineering, the designed experiments demonstrated how stereotypes can affect a sense of belonging, which can influence motivation, co-author Andrew Meltzoff said.

"The large surveys told us that the kids had absorbed the cultural [stereotype](#) that girls are less interested in computer science and engineering. In the experiments we zeroed in on causal mechanisms and consequences of stereotypes," said Meltzoff, a professor of psychology at the UW and co-director of the Institute for Learning & Brain Sciences. "We discovered that labeling an activity in a stereotyped way influenced children's interest in it and their willingness to take it home—the mere presence of the stereotype influenced kids in dramatic ways. This brought home to us the pernicious effect of stereotypes on

[children](#) and teens"

And that's important, added co-author Sapna Cheryan, a UW professor of psychology, because if fewer girls feel they belong, then fewer might pursue computer science or engineering through school and beyond. That can lead to gender disparities in STEM fields and even worsen the wage gap.

"Current gender disparities in computer science and engineering careers are troubling because these careers are lucrative, high status, and influence so many aspects of our daily lives.

The dearth of gender and racial diversity in these fields may be one of the reasons why many products and services have had negative consequences for women and people of color," Cheryan said.

Teachers and parents can help counteract stereotypes by offering high-quality computer science and engineering activities early in elementary school—and encouraging [girls'](#) participation, the authors note.

More information: Gender stereotypes about interests start early and cause gender disparities in computer science and engineering, *Proceedings of the National Academy of Sciences* (2021). [DOI: 10.1073/pnas.2100030118](https://doi.org/10.1073/pnas.2100030118).

Provided by University of Washington

Citation: Kids, teens believe girls aren't interested in computer science, study shows (2021, November 22) retrieved 24 April 2024 from <https://phys.org/news/2021-11-kids-teens-girls-science.html>

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