

Barnard's president on how to develop STEM-confident girls at home

By Sian Beilock September 5



(iStock)

My 6-year-old daughter, who is entering first grade, has a tendency to point out that certain activities are most suited for boys or girls. “The girls like the dolls,” she tells me, “and the boys like the trucks.”

I’m a cognitive scientist and the new president of Barnard College, a private women’s college associated with Columbia University, whose mission is to address issues of gender and equip young women with the tools to succeed in any endeavor they pursue. So you can imagine how my daughter’s gendered commentary worries me. If she’s talking

about playing with trucks as a boys-only activity today, what will come next — math, science, technology?

As we get ready for the new school year, parents not only need to provide their daughters with backpacks and pencils but the tools to believe they can thrive in all subjects, including math, science, and technology.

Thankfully, I can report that research gives us a road map to develop STEM-competent and -confident young women. Best of all, any parent can carry out these best practices.

The highly publicized Google memo questioning [women's ability to succeed in tech fields](#) provides us with a priceless teaching moment. This is not the first time someone has tried to place limitations on young women because of biologically determined characteristics — it is a trope we hear all too often. But the research supporting innate differences between girls' and boys' preferences and abilities in math and science is shaky at best. More importantly for parents, there is plenty of evidence that our children are aware of, and respond to, society's input and expectations for them starting early in life. This means that the environment we create for them, and how we communicate our expectations, is crucial.

Girls as young as 6 pick up on the false notion that boys are smarter. In a [study](#) published earlier this year, researchers found that kindergarten girls are less likely than boys to believe that people of their own gender are “really, really, smart.” Girls at this age also begin to avoid activities — like many types of math and science — seen as most appropriate for “the smartest” kids.

Parents can either combat or reinforce these problematic stereotypes. It doesn't help a child if, when she struggles with schoolwork, her mother commiserates by saying, "math is hard" or "I struggled with science in school, too." While empathetic, these statements may do the opposite of what a parent intends by reinforcing the daughter's anxiety. My [research](#) has found that anxiety is not only unpleasant, but it actually saps one's focus and energy, interfering with learning. So, what is a parent to do? Here are some practical and easy-to-implement tips:

1. **Talk about math with your girls at home.** Kids whose parents count with them — "You have three gummy bears, and if I give you three more, how many will you have? Four, five, six ... six!" — enter school with stronger math skills. And this "math talk" — about numbers, shapes, measurements and patterns — helps kids succeed beyond math. As it happens, the math that children know at the start of kindergarten predicts their school achievement — in both math and reading — throughout elementary school. My research team and I have found that doing [bedtime math](#) (rather than just bedtime stories) helps boost the math skills of elementary school children, especially children whose parents are anxious about their own math abilities and tend not to use math talk in their daily routines.
2. **Focus on your daughter's effort.** When your daughter starts math, science, or technology subjects in school, help her by talking about these areas as subjects she can and will learn, like any other, with patience and practice. Praise her effort rather than her grades, and help her connect her effort with achievement by celebrating incremental successes along the way.

3. **Reinforce positive STEM attitudes.** As your daughter grows into a young woman, remember that we parents not only have the power to reinforce negative attitudes but — crucially— positive ones. When parents believe their kids can succeed, their kids believe it, too. In a [study](#) recently published by one of my lab members, parents who were encouraged to convey the importance and relevance of math and science to their high school children ended up with kids who performed better in math and science and were more likely to be pursuing a STEM career five years later.

4. **Offer relevant role models.** When people view their identity as being in conflict with a particular activity, they often end up not caring about the activity. When you don't feel like you belong, you don't want to participate. If math and science are seen as disciplines not appropriate for them, young women are left with two options: They can either stop valuing being a young woman or, give up on STEM. You can help overcome this perceived conflict by finding opportunities to talk about real and fictional women in STEM. (I've been enjoying talking about the NASA mathematicians and engineers in the film *Hidden Figures*.) Parents can play a major role in counteracting the stereotype that math, science and tech are better suited for boys.

Your daughter doesn't need to grow up to run a tech company, but our society is better off if she has mathematical and scientific chops and the confidence to use them. As her first and longest-lasting teacher, you have the power to equip her for success.

Sian Beilock, PhD, is a cognitive scientist and the president of Barnard College in New York. In 2017, 34 percent of the women who graduated from Barnard were STEM majors.

Follow [On Parenting on Facebook](#) for more essays, news and updates. You can [sign up here](#) for our weekly newsletter. We tweet [@OnParenting](#).