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Stereotype Threat (Part 2)

Joshua Aronson, Ph.D. • November 2007

Topic: Encouraging Girls in Math and Science
Practice: Female Role Models

Highlights

- By the age of ten, girls have gotten the message that boys are supposed to be better than them at math. This affects the choices they later make about what classes they want to take and where they want to focus their energies.
- Using role models—people who have overcome the odds and done well in math and science—is one of the best ways to combat this. These role models can convey the message that having difficulty is normal.
- Trying to confront the stereotype head on by denying it and talking students out of it often does not work; it is better not to focus on gender differences at all. Fewer girls end up in the science and math "pipelines."
- Making the curriculum fun and engaging is essential for success.

About the Interviewee

Joshua Aronson is an associate professor of developmental, social, and educational psychology, at NYU. He received his Ph.D. in 1992 from Princeton University. Before coming to NYU, he was on the faculty at the

University of Texas and was a postdoctoral scholar and lecturer at Stanford University. Aronson's research focuses on the social and psychological influences on academic achievement. Aronson is internationally known for his research on "stereotype threat" and minority student achievement, research that offers a strong challenge to traditional, genetic explanations of why African Americans and Latinos perform less well on tests of intelligence than their White counterparts, and why women trail men in hard math and science. Aronson and his colleagues' research shows how stereotypes that allege lower ability among these groups depress Black and Latino students' test and school performance and women's comfort and performance in advanced mathematics and science domains. He has authored numerous chapters and scholarly articles on this work and is the editor of *Improving Academic Achievement: Impact of Psychological Factors on Education* (Academic Press). His current work focuses on methods of boosting the learning and test performance of underachieving youth. Aronson has received numerous awards and grants for his research including Early Career awards from the Society for the Psychological Study of Social Issues and the National Science Foundation, and the G. Stanley Hall Award from the American Psychological Association. He was the founding director of the Center for Research on Culture, Development and Education at New York University. His forthcoming book is called *The Nurture of Intelligence*.

Full Transcript

With regard to girls in math and science, when given the choice, girls will choose easier problems when they think that you are evaluating their mathematics ability. Whereas, boys will choose harder problems when they think you're evaluating their ability. So they've gotten the message that boys are supposed to be better at math than girls, and it's around at age 10 when this starts to affect their performance and some of their performance oriented choices.

But the real difference, what really seems to separate girls and boys, is when they start getting choices about what they're going to—not major in, but the classes they want to take, where they want to spend their energy. People tend to put their energies into things they feel they're good at and that's where the cultural stereotype comes in.

One of the best ways, in my opinion, is to use role models. People who have overcome the odds and done well in mathematics and science, who the girls can look up to and sort of identify with. One thing that one needs to do is to convey the message that difficulty is normal. I refer to this often as the "normality of struggle." People often experience their own struggles and think, "Gee, I'm the only one who's having this much difficulty with this material." And so if they look at a role model who's done well, it's easy for them to discount the role model as someone who is especially talented, and they can say, "Sure, you could do it because you're so good at this."

So if a role model, however, expresses to the student in some way that it was difficult, and yet the person was willing to keep struggling through it because they loved the material—that's the most potent role model you can imagine because now the normality of struggle, that everyone struggles—the idea that everyone struggles—makes it so that the kid doesn't say, "Oh, I see. My struggle means that I'm no good at this." No, everybody struggles and it gets easier for everybody. That's the message the role model needs to send.

One thing that I've seen teachers do and one of the struggles is that they try to take these stereotypes head on. So they simply try to deny that the stereotypes are true, and what's interesting about that is that stereotypes kind of die hard. And efforts to kind of talk kids out of the stereotypes they hold almost never work. There seems to be almost a rebound effect. And so I actually don't recommend talking about stereotypes.

Teachers often replicate what they've seen in sort of diversity training, which tends to talk about differences between groups and how differences should be honored and how we should focus on the differences. I think just the opposite is true. In fact, studies show that when you get kids, adults, to focus on what makes the group similar, a lot of these effects go away.

In one really cool study that I reviewed not long ago they had men and women about to take a math test simply jot down four things that made men and women alike. And in the other condition they didn't do that. And what they found was that put a big dent in the gender gap in math performance, the women's performance came up when they started thinking of themselves as— thinking of the ways in which they were similar to men.

That, to me, says that focusing on differences is not—even if you're going to say, "Now let's respect those differences"—is not the best way. I think we should focus on what makes us similar.

So a lot of times these sort of sensitivity training models don't actually do what they are supposed to do. There's a number of studies showing that if you frame a test as a measure of mathematics ability, women do worse than if you just frame it as a problem solving exercise. If you have women indicate their gender on the cover of a math test, they do worse on the math test.

One of the most interesting recent studies was actually conducted by the Educational Testing Service, who gave the AP Calculus exam. And in one version of it, they had people indicate their gender and race after the test instead of before the test. Now they typically ask that information before the test, and the question was: if following some of the stereotype threat studies, you moved it to the end of the test, would women do better? And the answer is yes, they did a lot better. And in fact, if the ETS made the simple change of moving that information to the end of the test—simple and cheap change—4,700 more women every year would get AP Calculus credit.

I think that at a fundamental level, you don't want to talk about stereotypes too much, especially with younger kids. What really matters and what I've said before, is to focus on role models. Because that sends the implicit message that's very powerful, that anyone can do it and what really matters is whether they like the material. So you see a woman doing math, you see a woman being enthusiastic about mathematics. That sends a much more powerful message than the teacher saying, "You know, this stereotype is not true."

Now, if the math and science that kids are getting isn't made at least somewhat fun, then—or exciting—messages about successful women won't make a lot of sense to kids. The role model will be seen as some kind of abnormality, like a freak who finds enjoyment in this really dull stuff that the teacher makes us do.

One's own teacher is the most potent person to teach and to teach by example. So if teachers have no enthusiasm for their materials, how on earth can we expect their students to? So what really works, by and large, is making the curriculum really fun, really engaging, and really meaningful for kids so that they understand why somebody like this role model that you're presenting them with might be passionate about studying math or science.