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# Stereotype Threat (Part 1)

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

### Highlights

- "Stereotype threat" is the (often unconscious) fear of confirming a negative stereotype about one's own group.
- Children are aware at an early age that boys are "supposed" to be better at math than girls. Girls start out being as good at math as boys, but by middle school, stereotype threat becomes an issue and girls' performance on math assessments suffers.
- This perception causes problems when girls get old enough to start making choices—what classes they want to take, what field they want to major in. People avoid things they don't feel particularly good at. Fewer girls end up in the science and math "pipelines."
- Feelings about our own intelligence are fragile. Teachers who understand this have significant power.

### 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

Stereotype threat is a largely unconscious fear or apprehension that people experience when they're at risk of confirming a negative stereotype about their group. Now, all of us belong to groups that have some kind of stereotype about them. Some of the stereotypes are positive, some are negative, but when we're in a group that has negative stereotypes about something central—like an ability, like intelligence—being in a situation where your behavior might confirm that stereotype turns out to be kind of a troubling predicament for people. And so it's that sense of being at risk—that you may do something that lives up to the stereotype, or lives down to the stereotype as the case may be, that creates a sense of anxiety, of tension.

People don't always know that this is happening to them. That's why I say it's largely unconscious. People can sort of report that they're wary or uneasy in a situation. But they don't quit have the ability to put their finger on what exactly is making them wary all the time. So it's that sense, anyway, of wariness that people experience when they might do something that confirms a stereotype.

With regard to girls in math and science, the stereotype is out there, and kids by a pretty early age can tell you that boys are supposed to be better at math and science than girls. What's interesting though that girls seem to be every bit as good in most areas of math than boys do up until a certain age, up until about middle school. And this is where we start to see the problems. Prior to this, girls may express a little less confidence, but typically, again, they perform just as well as boys in their classes. On some high pressure exams—some time tests—boys do a little bit better. But this difference doesn't really emerge until around age 10.

So what's going on here? Well this is when we've found that stereotype threat starts affecting people. This is when we find, for example, that girls will do worse on time tests in mathematics, but not on time test of verbal ability. This is where we find that, 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 energies. People tend to put their energies into things they feel they're good at. And that's where the cultural stereotype comes in, when people make choices about "what are you good at, what feels comfortable to you, what do you want to spend a lot of time on?" It's sort of human nature to turn away from and avoid those things that are associated with unpleasantness, with fear, or repeated failure, or simply things we don't feel we're particularly good at.

So in the early years of school, of course, we're not allowed to avoid certain school subjects. We have to take the curriculum. All of it. But as soon as students are given the choices, and this typically happens in middle school, girls start to choice mathematics and science less than boys. And so I think that's where the real divergence in abilities comes. Women in the science and math pipeline, women who would go on to be engineers and physicists, and it's a rare group of women who does this, and the question is why aren't there more of them in the pipeline? One possibility is that they are stereotype threatened.

Catherine Good and I wanted to see if this was true so we went into the highest achieving math classes we could find. And what you find in these classes are mostly men, lots of Asian men, and then this small huddle of women in one part of the classroom. So it's an arena, sort of, that's right for stereotype threat, but at the same time these are women who have made it to the highest level of math at their university. So they've got lots of talent, and probably lots of drive, but the question is: does stereotype threat nonetheless hold them back? So what we did was very simple; we got the professor to administer an exam that would could toward their grade or toward their credit. And we had—in one condition we had them present the math test just as another math test they were taking another part of the curriculum. In the other condition, the professor added a label to the math test that said "by the way, you might be interested to know that this math test has never shown a gender difference in the past." That was designed to make the stereotype of intellectual inferiority among women, or mathematical inferiority irrelevant in that situation.

And what we found was so fascinating. We found that under the normal circumstance test presentation the girls did just as well as the boys—or the women did just as well as the men. But when we reduced stereotype threat, they outperformed the men by a significant degree. So here's a case where the woman are really smarter than the men. They developed lots of mathematical skills to make it this far, but nonetheless they're being held back down to the level of the men in their group. So it was delightful to see

that, even at that level, stereotype threat was operating but that if you got rid of it, you got this extremely good performance out of these women.

I think the biggest lesson that I've learned from this research, something that I didn't know when I started this research, was how incredibly fragile human intelligence is. How we walk into a different situation and we can be less or more smart depending on the details of that situation, and I think this gives teachers who understand this a tremendous amount of power.