# Stereotype- It's impact on academia and How to overcome it?

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# Introduction

**What is stereotype?**

In social psychology, a stereotype is a **fixed**, **over generalized** belief about a particular group or class of people. It's **a belief or thought that has been given to/ or about a specific group of individuals**.

At any one time, our brain is bombarded with an infinite number of stimuli. Without an efficient method of making sense of this information, our brains would become overloaded. By **sorting stimuli (for example, experiences, objects, people) into categories, we can process our environments more efficiently**. This frees up mental resources for other tasks and reduce the amount of processing (i.e. thinking) we have to do when we meet a new person.

**Two types of Stereotype:**

- Positive stereotype
- Negative stereotype

# Positive stereotype

**Positive stereotypical** expectations are typically **complementary** and a **source of pride** among group members (Czopp, 2008), which may enhance performance. This is known as **Stereotype boost.**

For example, Asian Americans are often characterized as a "**model minority**" (Kao, 1995) because of their high academic achievement.

However, Asian students may well have good reason to **be concerned about the consequences of failing to live up to the positive stereotypes** held about their group.

Research suggests that **they can pay a heavy cost for falling short,** which can place a considerable burden on members of the stereotyped group, **adversely affecting their performance** in the stereotyped domain.

Kao, G. (1995). Asian Americans as model minorities? A look at their academic performance. *American Journal of Education, 103*(2), 121–159.
Ho, C.P., Driscoll, D.M., & Loosbrock, D.L. (1998). Great expectations: The negative consequences of falling short. Journal of Applied Social Psychology, 28, 1743–1759.

# Negative stereotype

**Negative stereotypes** are traits and characteristics, negatively valanced and attributed to a social group and to its individual members.

Study by Claude Steele
African-American and White students were asked to take an identical exam and were broken into two groups.

Study 1:

| **Group A** | **Group B** |
|---|---|
| · Exam was based on cognitive ability **Result:** African-American students performed worse. | The exam without reference to aptitude. **Result:** Both African-American and White American students performed equally. |

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of personality and social psychology, 69(5)*, 797.

# Negative stereotype

Study 2:

**Group A**

A race-prime students were required to list their race prior to taking the test

**Result:** African-Americans in the race-prime group fared worse than any other group,

**Group B**

A non-prime group in which students were asked to list their race at the close of the exam.

**Result:** African-Americans in the non-race-prime group performed equally to Whites.

The results of these types of experiments indicate that **simple awareness of a stereotype is sufficient to reduce minority's intellectual abilities.**

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of personality and social psychology, 69(5)*, 797.
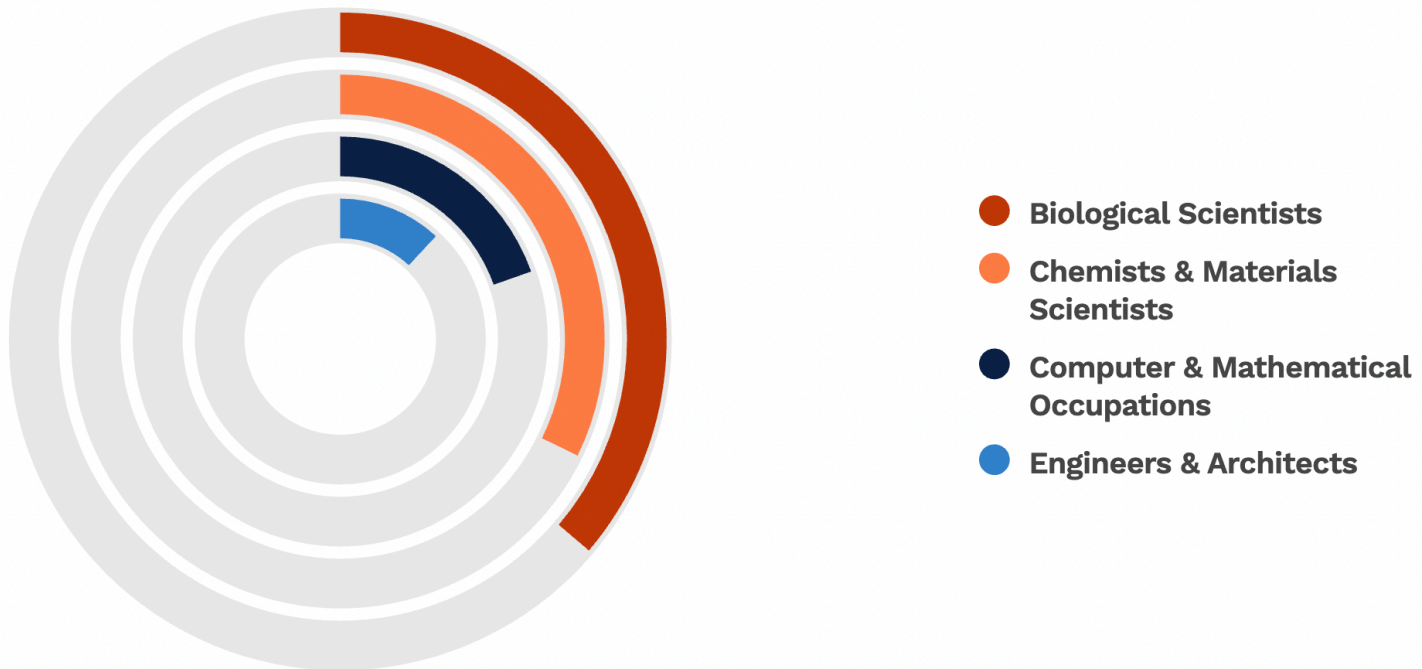
# STEM-Gender gap

**Figure 15. Performance on a Challenging Math Test, by Stereotype Threat Condition and Gender**
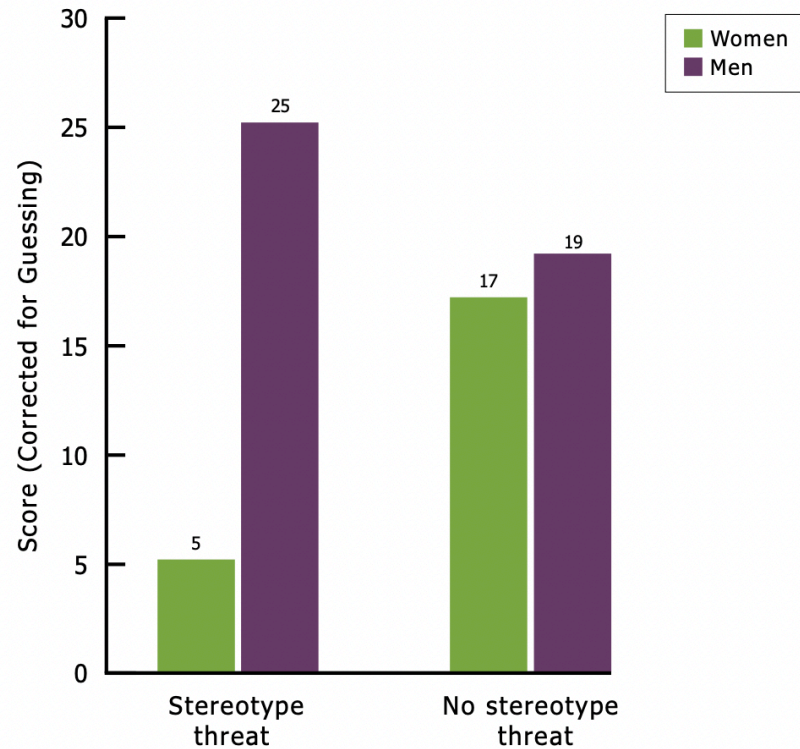


*Source:* Spencer et al., 1999, "Stereotype threat and women's math performance," *Journal of Experimental Social Psychology, 35*(1), p. 13.

# STEM-Gender stereotypes



Women in STEM Occupations

Legend:
- Biological Scientists
- Chemists & Materials Scientists
- Computer & Mathematical Occupations
- Engineers & Architects

SOURCE: U.S. Bureau of Labor Statistics, "Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity," Labor Force Statistics from the Current Population Survey, Table 11, 2019.

# STEM-Gender stereotypes

Participants were asked, who were (boys/girls) usually good at STEM, can be good at STEM and should be good at STEM?

**In early childhood-** participants showed a greater tendency to say that members of their gender in-group (either 'boys' or 'girls') are good, which demonstrating that **high prevalence of in-group bias during childhood**.

**In the middle school-** In case of **boys, the in-group bias of early childhood is still apparent** by middle childhood. But for **female participants in middle school did not show the same in-group bias** that girls in early childhood did.

**In adolescence-** female and male participants both say that '**both boys and girls' are usually, can, and should be good at STEM**.

L. McGuire, et al. Journal of Applied Developmental Psychology Volume 67, March–April 2020, 101109

# STEM-Gender stereotypes



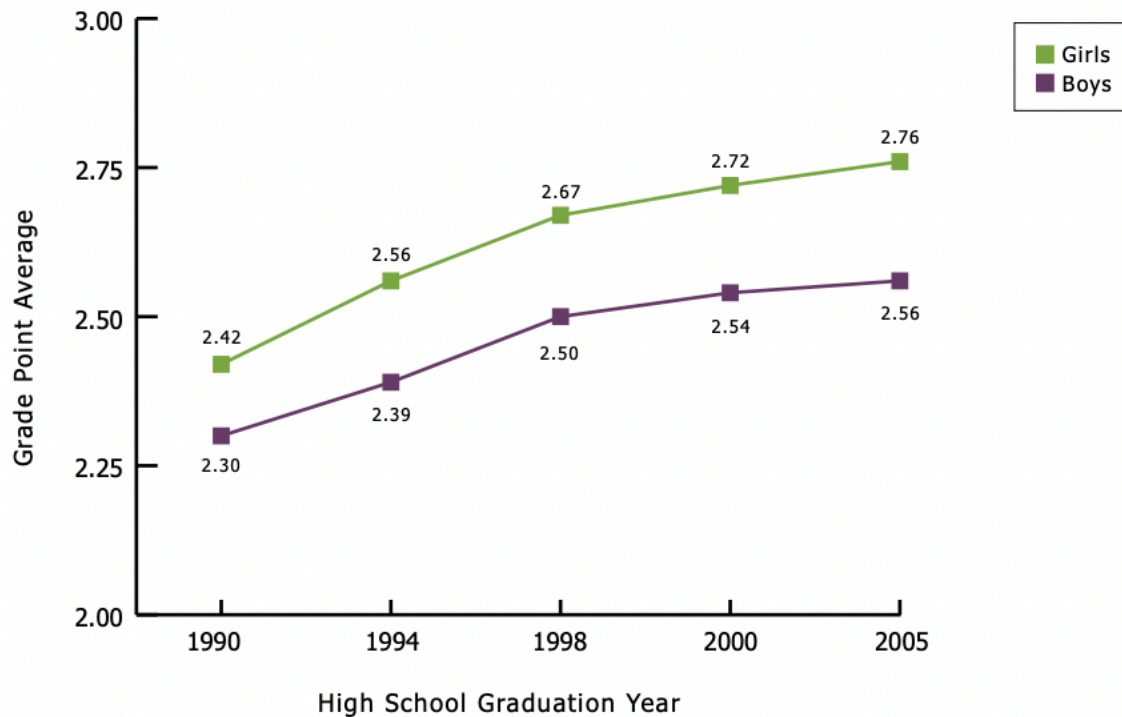Figure 1. High School Credits Earned in Mathematics and Science, by Gender, 1990–2005
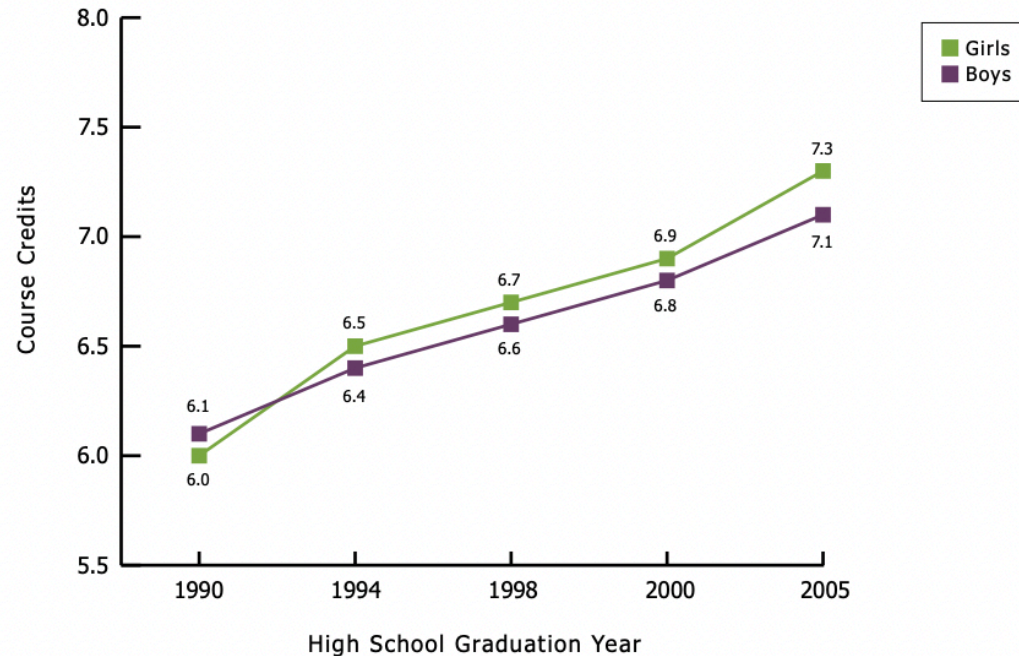
Source: U.S. Department of Education, National Center for Education Statistics, 2007, *The Nation's Report Card: America's high school graduates: Results from the 2005 NAEP High School Transcript Study*, by C. Shettle et al. (NCES 2007-467) (Washington, DC: Government Printing Office).

Figure 2. Grade Point Average in High School Mathematics and Science (Combined), by Gender, 1990–2005

# STEM-Gender stereotypes



**Figure 2. Grade Point Average in High School Mathematics and Science (Combined), by Gender, 1990–2005**

# STEM-Gender stereotypes

Participant **gender also played a role in stereotype responses** in-dependent of participant age.

When asked who was 'usually' good at STEM (stereotype awareness)?
-Male participants were more likely to show male bias than were female participants.

In case of STEM endorsement ('should') and flexibility ('can') measures also, male participants demonstrated greater male bias than did female participants.

# STEM gender stereotypes

In spite of the self-reported equitable STEM ability stereotypes, adolescent girls lose interest in STEM and are less well represented by the time they reach college.

Another study has found that the lack of minorities and women in STEM professions solely to a lack of initial interest in STEM majors, but rather occurs through attrition from these majors during the course of college two explanations for this attrition—**lack of academic preparation** and **stereotype threat.**

Studies have found that women in academia are evaluated more on personality then ability, compared to male colleagues, and are expected to
be more nurturing and empathetic (Heilman and Okimoto, 2007; Mitchell and Martin, 2018)
**Forbes et al (2015)** found that women exposed to stereotype threat process negative feedback more deeply than positive feedback, and that depth of negative feedback processing mediated "bad" performance on future tasks.

# How to overcome it?

1) A focus in early childhood on the many **successful female scientists, mathematicians and innovators from the fields of engineering and technology** could be a key strategy to strengthen the idea that women usually, can and should do well in these domains.

2) Stronger efforts to **recruit and retain minority and female scholars** in sciences and engineering would most certainly help with retraining vulnerable students in these majors.

3) Even if teachers are not of the same race/ethnicity or gender as the student, there are **mentoring techniques** that can reduce the effects of stereotype threat.

4) **Constructive criticism to communicate high standards** while at the same time **receiving assurances** that they could meet these standards resulted in students feeling less that they would be judged based on stereotypes.

5) By creating a **"growth mindset"** environment, teachers and parents can encourage girls' achievement and interest in math and science.

Baseley and Fischer; Soc Psychol Educ (2012) 15:427–448

# Conclusion

1) Most people have some level of gendered stereotype bias. A recent study by UNDP showed that worldwide, **91% of men and 86% of women hold at least one bias** against women with regard to politics, economics, education, violence or reproductive rights.

2) However, **to truly change the system we must train everyone, including ourselves and especially those in positions of power and privilege**, to be effective bystanders against gender bias, sexual harassment, and the perpetuation of negative stereotypes.

# A ROLE MODEL- SUDHA MURTHY

## LETTER TO JRD TATA FROM SUDHA MURTHY OF INFOSYS

🏷 Good to Know Forwards

A letter from a girl to JRD Tata is a letter Sudha Murthy of Infosys had written to the then Tata Group chairman in 1974. She was just a postgraduate student studying in Indian Institute of Science, Bangalore when she wrote this letter. Here is why she and what she wrote and the outcome it had.



**Letter to JRD TATA from Sudha Murthy**

# Letter to JRD Tata from Sudha Murthy

'The great Tatas have always been pioneers. They are the people who started the basic infrastructure industries in India, such as iron and steel, chemicals, textiles and locomotives; they have cared for higher education in India since 1900 and they were responsible for the establishment of the Indian Institute of Science. Fortunately, I study there. But I am surprised how a company such as Telco is discriminating on the basis of gender.'- Sudha Murthy.

'Do you know why we said lady candidates need not apply? The reason is that we have never employed any ladies on the shop floor. This is not a co-ed college; this is a factory. When it comes to academics, you are a first ranker throughout. We appreciate that, but people like you should work in research laboratories.'- An interviewer.

'But you must start somewhere, otherwise no woman will ever be able to work in your factories.'- Sudha Murthy.