

Being An Active Ally For URM In STEM

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July 7th, 2020



I am here talking to you about bias and inclusion because I have the privilege to do so. Many folks do not.



We can intentionally exclude people even when they are present: equity and inclusion are more difficult than diversity.



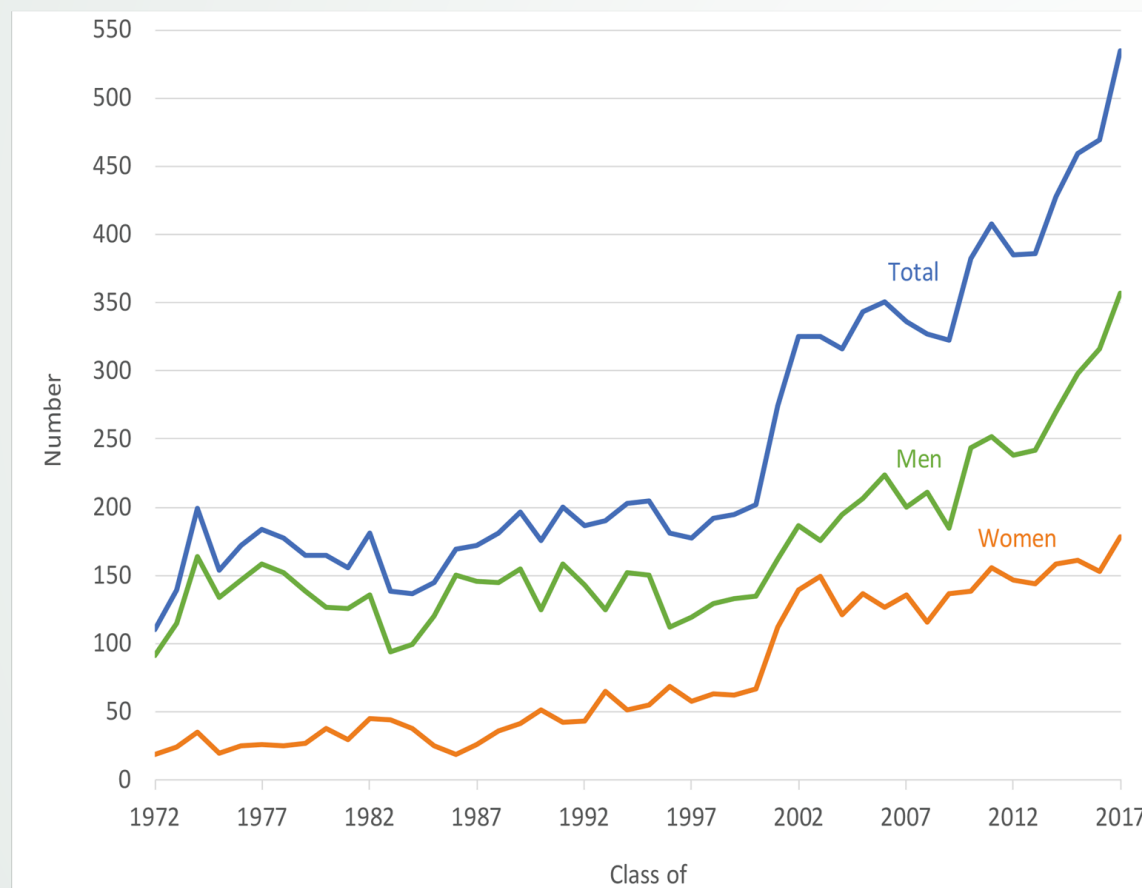
I am here because I want to do something about systemic oppression (in academia).



Research

The first step to becoming an active ally is to gain information on the current climate

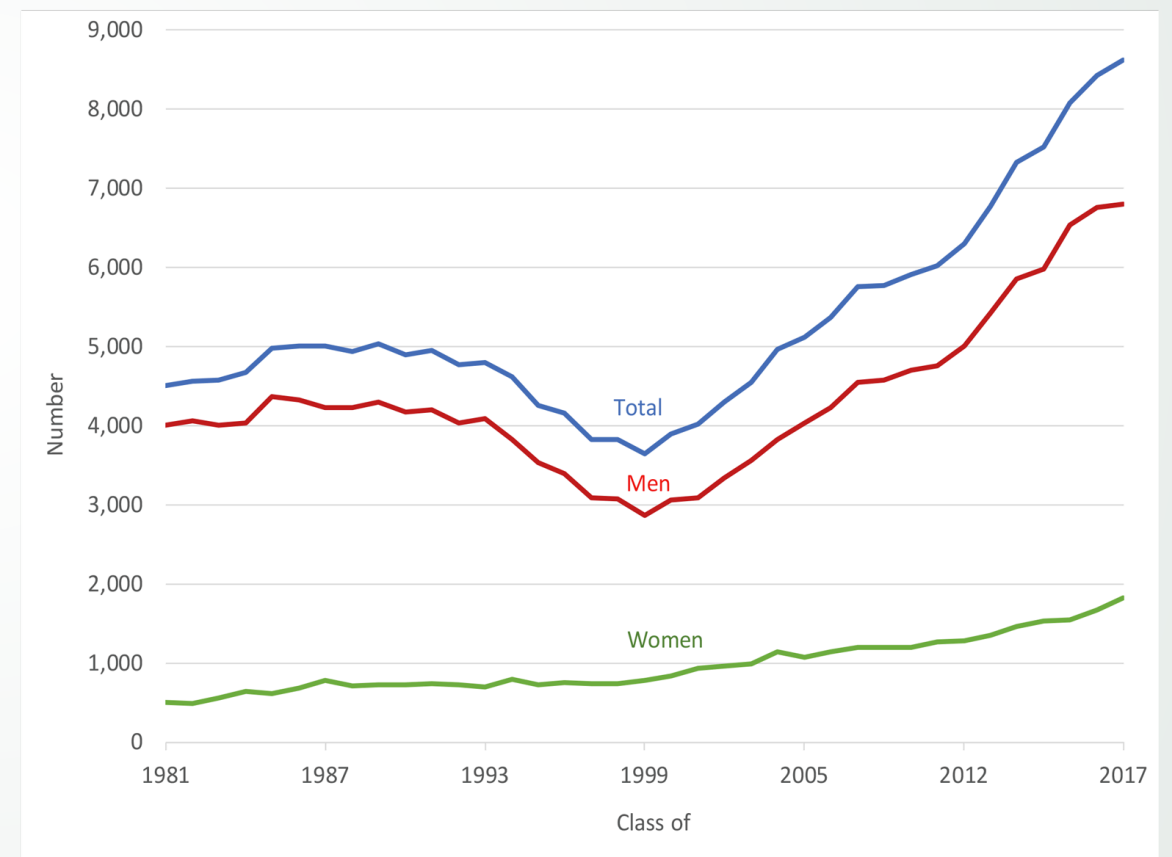
Number of Bachelor's Degrees Earned in Astronomy.



AIP Statistics

aip.org/statistics

Number of Bachelor's Degrees Earned in Physics,
Classes 1981 through 2017.



AIP Statistics

aip.org/statistics

The disparity between men and women earning physics and astronomy bachelors continues to be low, but the numbers for women are rising

Research

The first step to becoming an active ally is to gain information on the current climate

Number of Bachelor's Degrees Earned by African-Americans
in Physical Science Fields, 2005 and 2015

	Total Number of Degrees Earned by All Students		Number of Degrees Earned by African-Americans	
	Degrees in 2015	Percent Change 2005 to 2015	Degrees in 2015	Percent Change 2005 to 2015
Earth Sciences	6,387	94%	146	165%
Atmospheric Sciences	740	9%	14	75%
Chemistry	15,567	46%	1,036	31%
Physics	7,329	57%	175	4%
Astronomy	480	25%	10	67%
Oceanography	265	91%	9	29%
Other Physical Sciences	759	32%	62	72%
All Physical Sciences	31,527	55%	1,452	36%

**African Americans
earning bachelors
degrees is only
2.4% (2.1%) of all
physics
(astronomy)
degrees earned**

AIP | Statistics

aip.org/statistics

As the total number of students rises in physics by 57%, the number of African Americans earning a bachelors in physics only rose by 4% from 2005 to 2015

Why is there a disparity?

- The American Institute of Physics (AIP) formed a national task force of sociologists, physicists, and astronomers to elevate African American representation in undergraduate physics and astronomy - TEAM-UP
- After thorough research was conducted, TEAM-UP published "The Time Is Now: Systemic Changes to Increase African Americans with Bachelor's Degrees in Physics and Astronomy"
- This report outlines 5 factors responsible for the success/failure of African American students



TEAM-UP Report

- The five factors from the TEAM-UP report are the following:
 - Belonging - an individual's feeling of being a welcomed and contributing member of a community
 - Physics Identity - how one sees oneself with respect to physics as a profession
 - Academic Support - teaching effectively, providing mentors opportunities, and student-centered support
 - Personal Support - non-academic support such as financial and mental health resources
 - Leadership and Structures - the department as a whole, and it's leadership, must be committed to increasing the number African American students



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Belonging

- A sense of belonging is a very important factor of success/failure for all students
- Frequently URM students experience the opposite
 - Socially isolated
 - Negative interactions with faculty and peers
 - Feel unwelcome in a department
- Often these result from:
 - Unconscious Bias
 - Micro-aggressions

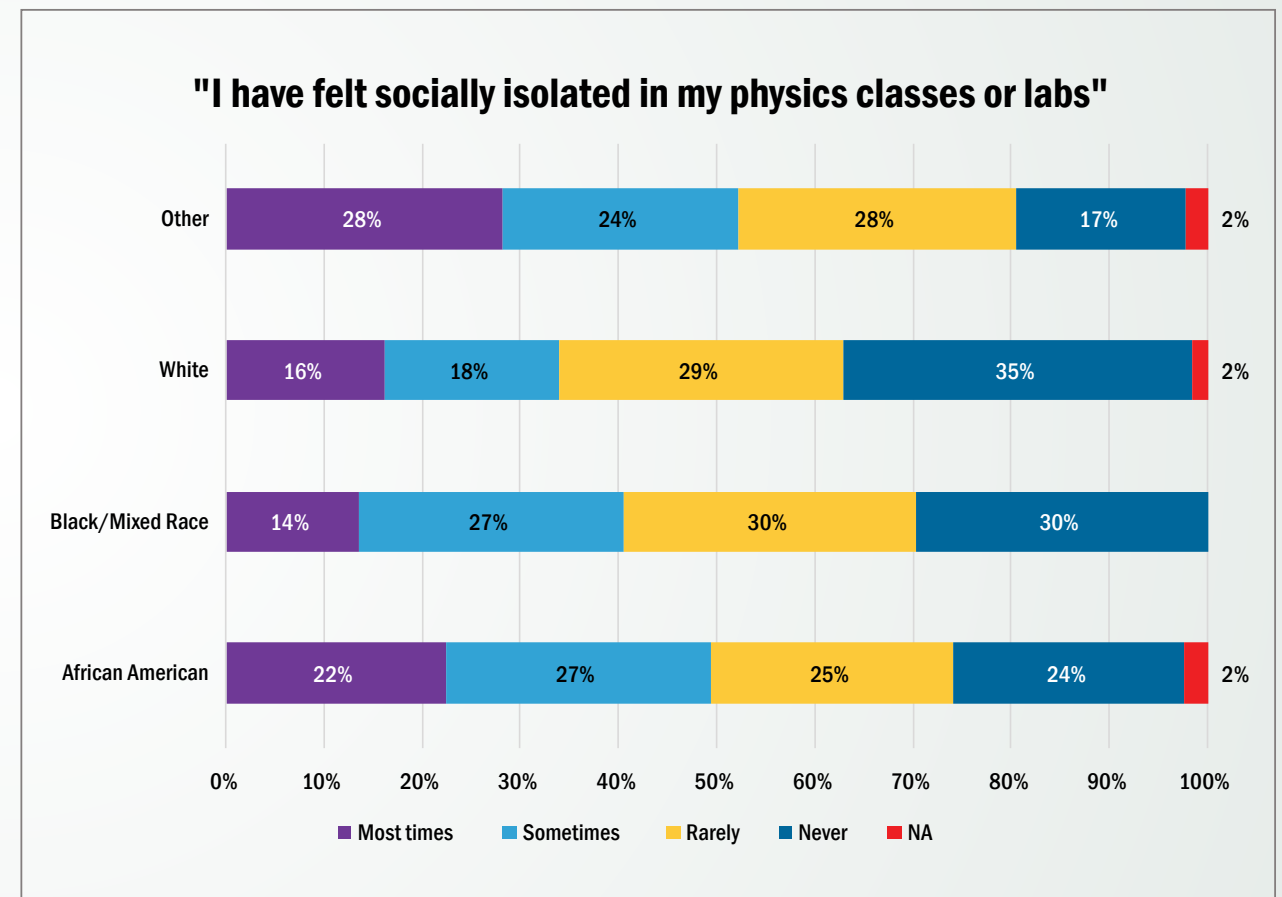


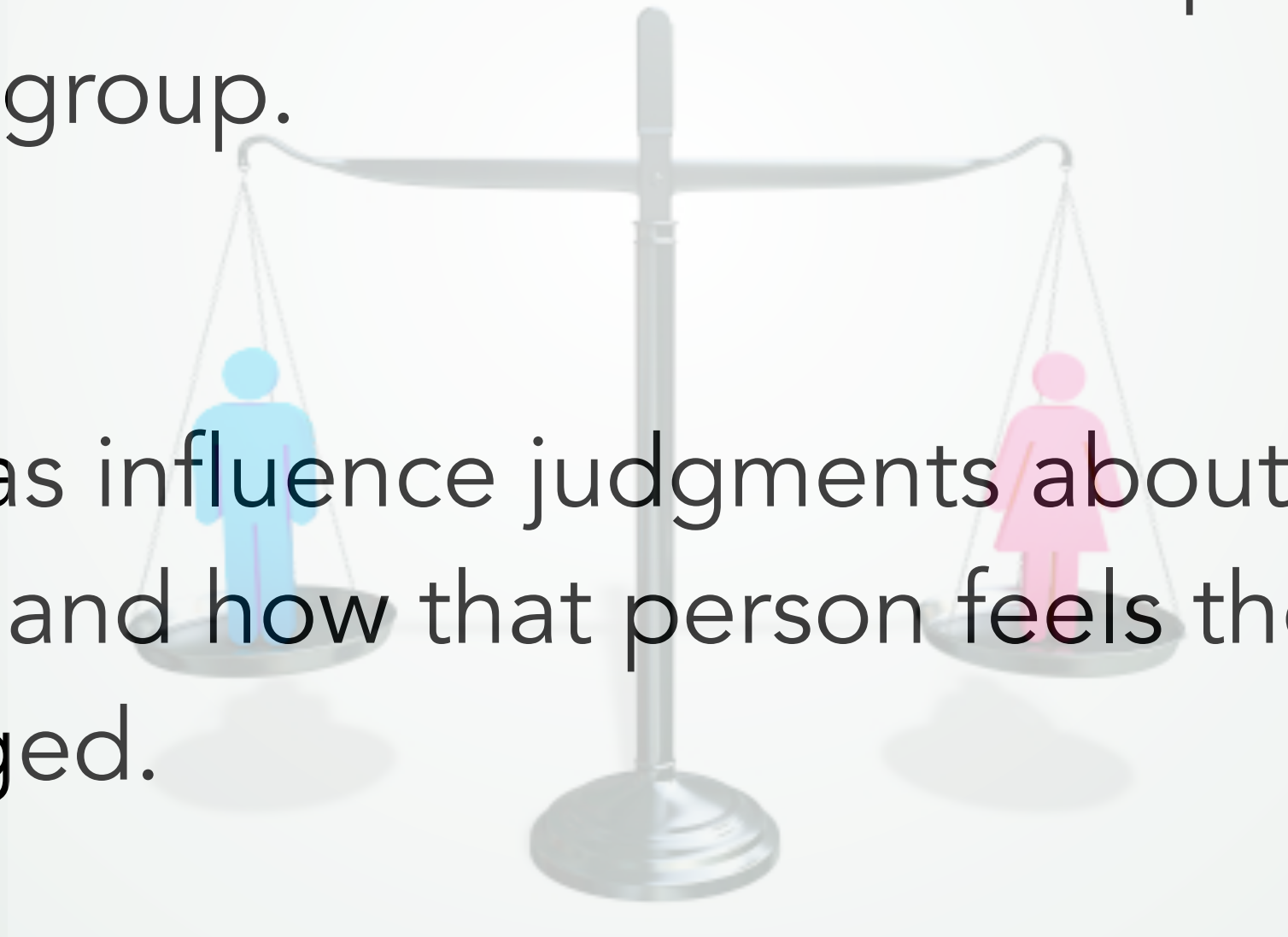
Figure 5: Students' sense of isolation in physics classes or labs by race
Source: TEAM-UP student survey Caption: Students' sense of isolation in physics classes or labs by race.



Where does unconscious bias stem from?

A ***schema*** is an expectation about a person based on their membership of a certain group.

Schemas influence judgments about said person and how that person feels they will be judged.



Types of schema

Schema = non-conscious hypotheses

- Gender: men judging women, women judging women
- Race/ethnicity: whites judging minorities; minorities judging minorities
- ...religion, disability, skin tone, weight...

Unconscious bias is NOT discrimination

Nosek, Banaji, & Greenwald (2002). *Group Dynamics: Theory, Research and Practice*, 6, 101-115.

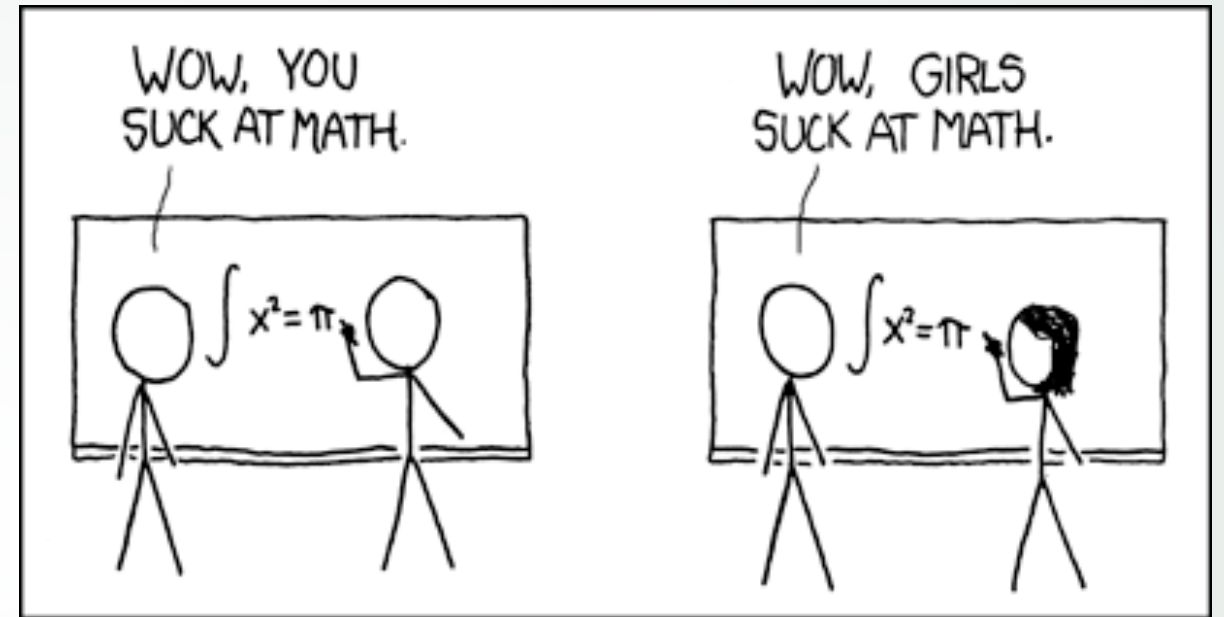
Fiske, Cuddy, Glick, & Xu (2002). *Journal of Personality and Social Psychology*, 82(6), 878-902.

****disclaimer: these studies assume a gender-binary. I am aware and conscious that gender is NOT a binary, and am looking for a better study to include here that does NOT make this assumption****

Recognizing schema

Schemas come into play when:

- Lack of critical mass
- Time pressure
- Stress from competing tasks
- Ambiguity (lack of information)



Source: XKCD comics

“constant feeling that I am a representative; therefore I must be flawless [and] not seeing people like me in professors or even grad positions, not really having a confidant within the department . . . feeling incapable of doing the work and feeling less than.”

- student response on TEAM-UP survey

Fiske (2002). *Current Directions in Psychological Science*, 11, 123-128.

When do schemas matter?

- Peer to peer interactions
- Hiring
- Awards
- Promotions
- Fellowships
- Evaluation of CVs
- Admissions



This is where a schema can turn into an unconscious bias!



Unconscious bias resulting in micro-aggressions (or aggressions)

“Micro-aggressions are dangerous because they chip away at your desire to do science. When I started grad school, all I wanted to do was become an astronomer. Four years in and I hated my research. That’s not a coincidence” -Dra. Nicole Salazar



Examples of Micro-aggressions

#BlackintheIvory

 **Amirh Johnson** @amirh506 · Jun 28
Nuclear Medicine dept, security questions me. "You don't look like a physicist." I show credentials. My #medphys trainee shows up. Security: "You look like a physicist!" I challenge, "What makes him, but not me, look like a physicist?" Asian man vs. Black woman? #BlackintheIvory

6 9 51

 **Lydia Grmai, PhD** @singingshoes21 · Jun 29
Being "that Black girl in that lab" yet having to introduce yourself to people five separate times before they remember who you are. Hyper-visible yet invisible.

#BlackintheIvory

5 79 414

 **Valerie A. Fitzhugh, MD** @DrFNA · Jul 2
No, my career wasn't handed to me because I am black. I promise you that is not now this works. I earned every bit of what I have accomplished.

#YesPeopleSayThat #BlackintheIvory

29 125 1K

 **Lynnicia Massenburg** @LynniciaM · Jul 2
I had 2 cases of a white male college student assume my scholarship or fellowship awards were diversity awards only for minority students. One student wished there were "fellowships for white males in rural areas"...my fellowship was the NSF GRFP, he could apply. #BlackintheIvory

 **Allison Martin, MD** @globalsurgallie · Jun 24
Let me add to #BlackintheIvory...when my white male "friend" of 4 years in undergrad responded to me earning a scholarship @VUmedicine by saying "I wish they had scholarships for white guys" despite my 3.993 GPA and having higher scores than him on every exam...

Show this thread

1 1 16

 **James T. Carter** @JamesTCarter3 · Jun 28
I often think about the professor who told me something along the lines of "you're going to kill it on the job market because you're Black and went to Columbia".

To think about what that does to one's psyche is really a journey.

#BlackintheIvory

9 31 276



Critical mass decreases use of schemas

- With many individuals, less usage of group based schemas
- Increasing female numbers in evaluation group raised ratings of females being evaluated

Valian (1998) *Why So Slow? The Advancement of Women*. Cambridge: MIT Press, p. 280;

Heilman (1980) *Organizational Behavior and Human Performance*, 26: 386-395;
Sackett et al (1991), *Journal of Applied Psychology*, 76(2): 263-267.



Accumulation of disadvantage

- Each individual imbalance may seem minor but as the disadvantages accrue, they have major consequences in salary, promotion, prestige, and advancement to senior positions.
- If there is no active intervention, the cycle reproduces itself

Low representation <-> accumulation of disadvantage <-> performance underestimated <-> evaluation bias <-> lack of critical mass



Merton (1948) *Antioch Review*, 8, 193-210 and (1968) *Science*, 159, 56-63.

Valian (1998) *Why So Slow? The Advancement of Women*. Cambridge: MIT Press, p. 280.

Notes on unconscious biases

- Unconscious bias is unavoidable. It doesn't make you a bad person!
- Through **increased awareness, good practices, policy changes** and **enhanced accountability**, we can diminish the effect of unconscious bias
- All of us are complicit in marginalized people leaving STEM no matter how well meaning we are
- Workplaces that consider themselves to be generally friendly are especially dangerous to marginalized people, because they demonstrate a lack of self-awareness and resistance to change
- informed, honest, and reciprocal mentoring relationships are essential to countering the effects of micro-aggressions
- **We all need to create an environment that integrates marginalized people in the way they deserve**



How can I be an active ally?

- Some of the steps we can take to be an active ally for our URM colleagues are:
 - Obtain and spread knowledge
 - Read the TEAM-UP report and encourage your department to do the same
 - The American Association of Physics Teachers (AAPT) and the American Physical Society (APS) also have great resources
 - Listen to (and believe) our URM colleagues when they speak about their experiences
 - #BlackintheIvory are stories from those who feel they won't endure pushback or retribution
 - Project your openness to listening
 - Participate in programs/clubs designed to encourage the retention and success of URM
 - Examples: Women in Physics, National Association of Black Physicists, African American Women in Physics, etc.
 - Programs like STEP-UP (developed by APS)
 - Recognize and manage your own unconscious biases



Resources

- June 10th #strike4blacklives gathered many publications
- AIP reports on women and minorities in STEM
- AAPT report on Fostering a Safe and Inclusive Learning Environment
- APS programs for women, minorities, and LGBTQ+ in physics
- Conference for Undergraduate Women in Physics will be virtual on Jan 15-17 2021. Registration begins on Sept 8th!

