

A scenic landscape featuring a river flowing through a dense forest of tall evergreen trees. In the background, a rugged mountain range with snow-capped peaks is visible under a clear blue sky. A wooden bridge with a railing is on the left side of the river. The overall scene is bright and natural.

Implicit Bias

REU Luncheon

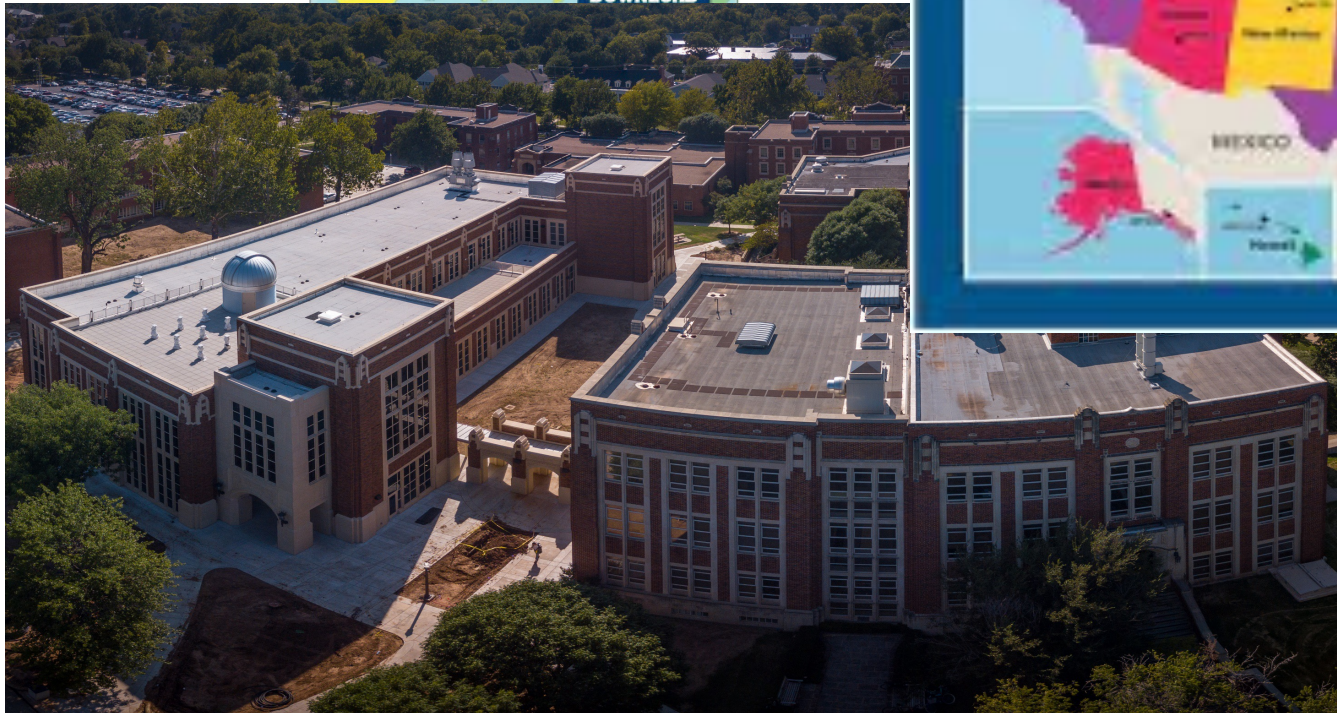
University of Oklahoma, Norman

Hiking near Benasque, Spain

Where Have I Been and Where Am I Now?



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Some Background: Who Am I?

- I love physics and I enjoy interacting with others --- these have always been my main two motivators.
- I have always been guided by what I like to do and less so by what others think of me or expect of me.
- I am a woman in a male-dominated field and I was a first-generation college student from a low-income family.
- I have a lot of privileges (I am White, I use the pronouns she/her/hers, I am from a country with an outstanding educational system,...).

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- I am a woman in a male-dominated field and I was a first-generation college student from a low-income family.
- I have a lot of privileges (I am White, I use the pronouns she/her/hers, I am from a country with an outstanding educational system,...).
- Have I suffered from implicit bias/micro-aggressions? Absolutely yes.
- Have I contributed to implicit bias/micro-aggressions? Absolutely yes.

What You Might Or Might Not Know About Oklahoma



Eastern collared lizard (Oklahoma's state lizard).

Wichita Mountains Wildlife Refuge is the largest bison refuge managed by the U.S. Fish and Wildlife Service.



Introductory Comments

- Substantial evidence suggests that discrimination persists in today's labor market, affecting hiring, pay, promotion, and other rewards.
- Diversity, Equity, and Inclusion (DEI) are important: Academia should lead by example.
- Scientific peer-reviewed studies report:
 - White job candidates receive a 50% higher callback rate for interviews than identical Black job candidates.
 - Black and Latino job applicants with clean records are treated like Whites just released from prison.
 - Blacks and Hispanics receive fewer opportunities to rent and purchase homes than Whites.
 - Women receive fewer interviews and offers than men.
 - Pregnant women receive more hostile treatment than non-pregnant women when applying for jobs.
 - ...

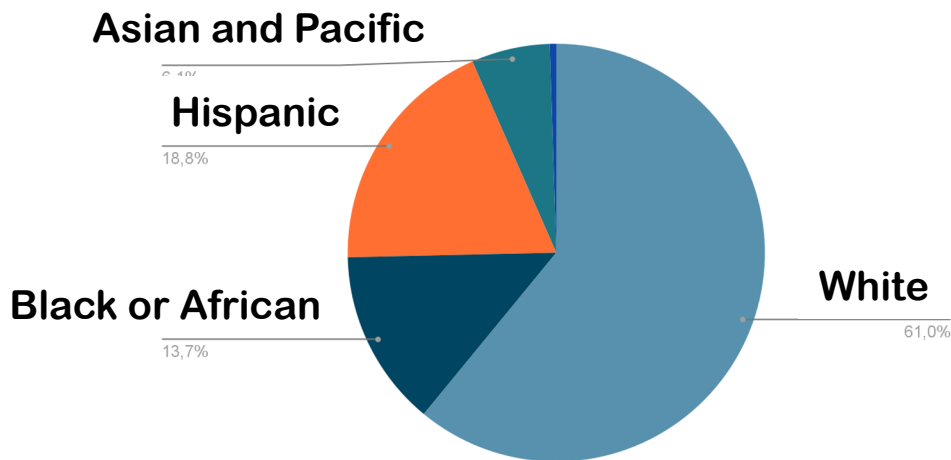
Is Academia An Exception?

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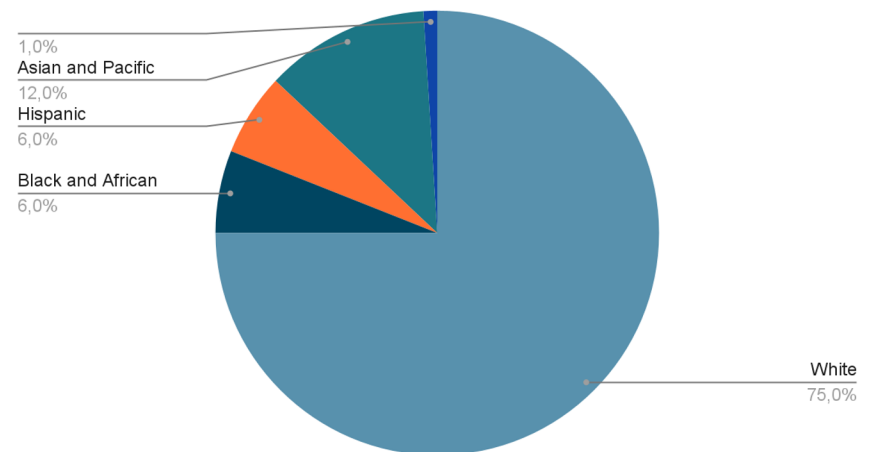
- The short answer is “no”.
- Within academia, women and minorities consistently fare worse than White males in terms of pay, promotions, job prospects, funding opportunities, and overall treatment.



(Vintage year 2019)



Points scored

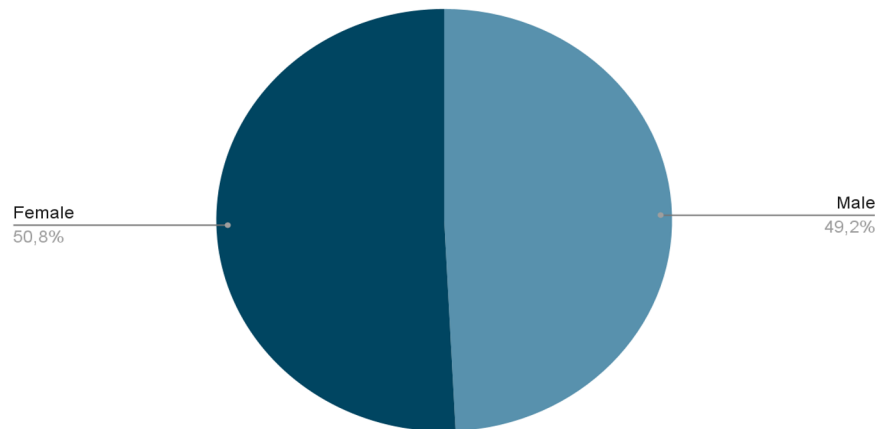


Full professors at U.S. postsecondary institutions in 2018
(U.S. Department of Education, 2020)

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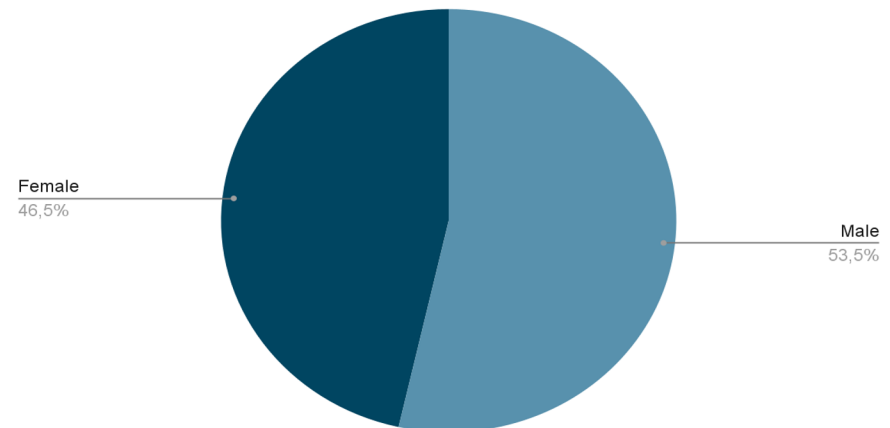
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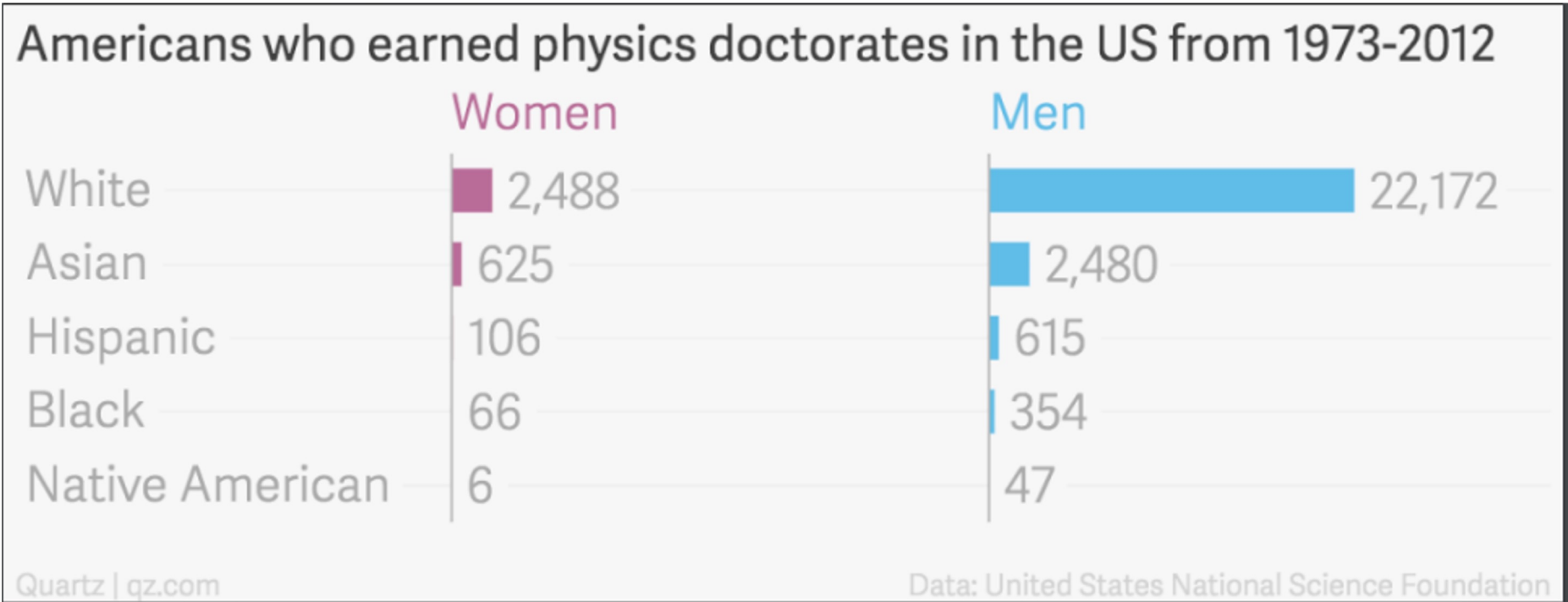


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Data Specific To Physics



Despite efforts and initiatives, the numbers are changing very, very slowly toward being more reflective of the breakdown of the US population...

This Is Not Meant To Be A Depressing Luncheon...

- The introductory slides remind us, painfully so, of the current realities: the (physics and astronomy) world is unfortunately not (yet) perfect.
- The remaining slides:
 - Summary of selected research / studies.
 - Definition and discussion of implicit bias.
 - **Acknowledging one's implicit bias will lead to change!!!**
 - A few personal thoughts --- things that have helped me...

Summary Of Milkman *et al.* Study

- **K.I. Milkman et al., J. of Applied Psychology 100, 1678 (2015), “What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway”**
- **>6,500 professors at top U.S. Universities from 109 Ph.D. granting disciplines and 259 institutions were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program.**
- **Names of students were randomly assigned to White, Black, Hispanic, Indian, Chinese (male/female) but messages were otherwise identical.**
- **Study measured whether faculty responded to the request for a meeting.**
- **Conclusion: Faculty were significantly more responsive to White male than to all other categories of students.**

Summary Of Milkman *et al.* Study

- “[...] we find essentially no evidence that the treatment of women and minorities is better in disciplines with higher female and minority representation.”
- “...a school’s U.S. News ranking is not significantly correlated with the school’s level of discrimination...”
- “[...] a faculty member’s academic rank (assistant, associate, or full professor) is [...] a nonsignificant predictor of discrimination [...]”
- “[...] the discriminatory gap is dramatically larger at private schools than at public schools.”

Explicit Versus Implicit Bias

Straightforward web search:

- Explicit or conscious bias: the person is very clear about their feelings and attitudes, and related behaviors are conducted **with intent**.
- Implicit or unconscious bias operates **outside of the person's awareness** (subconsciously) and **can be in direct contradiction to a person's espoused beliefs and values**.

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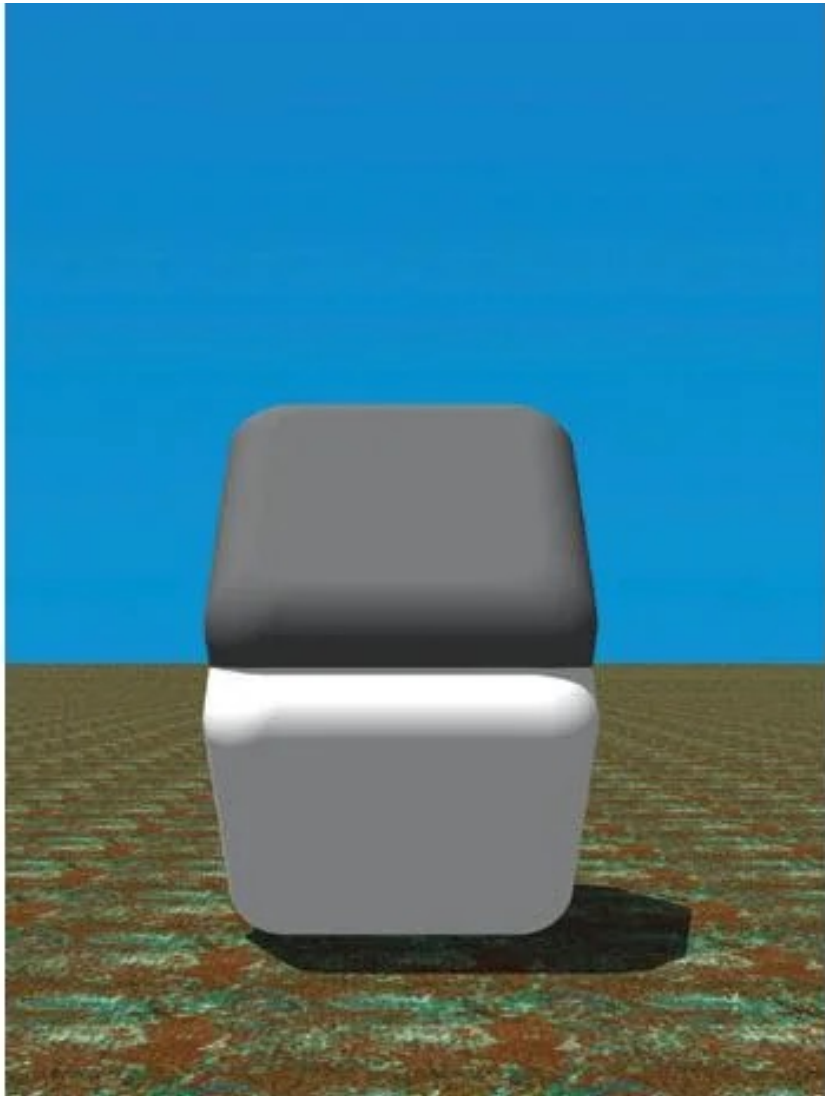
Note:

Implicit association and implicit bias are not necessarily the same.

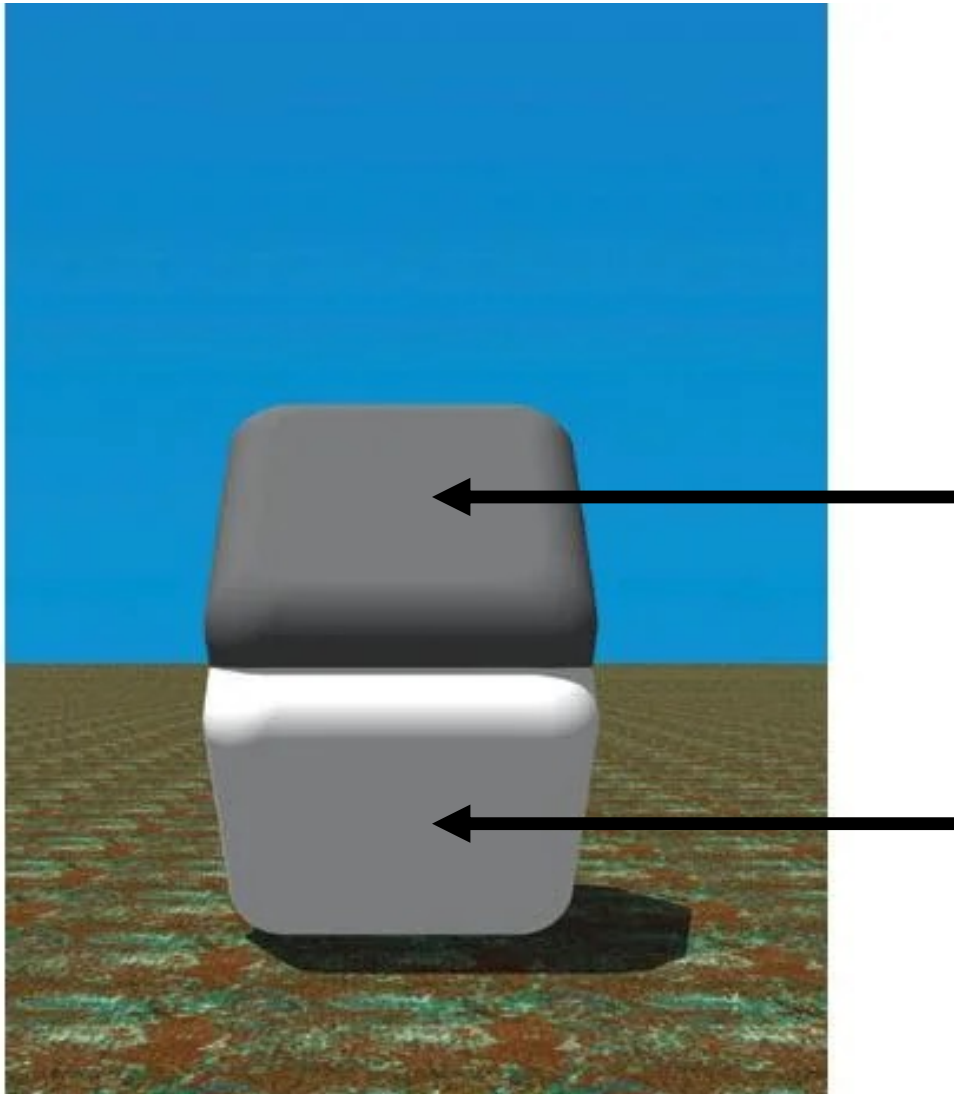
Our Brain As A Processor



Our Brain As A Processor

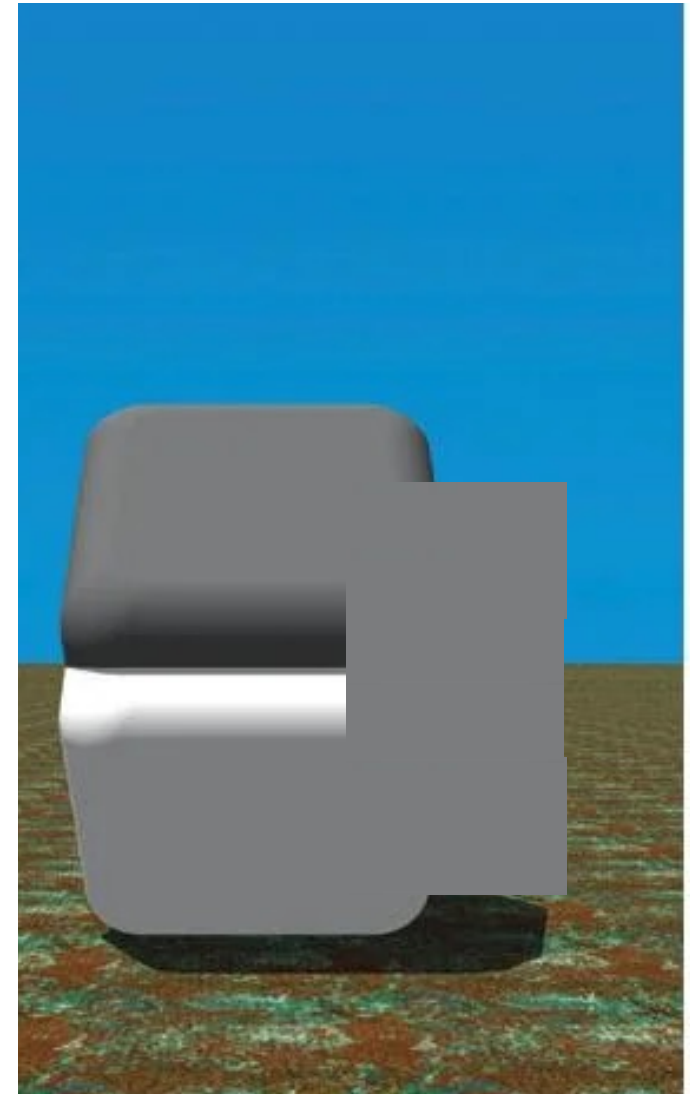
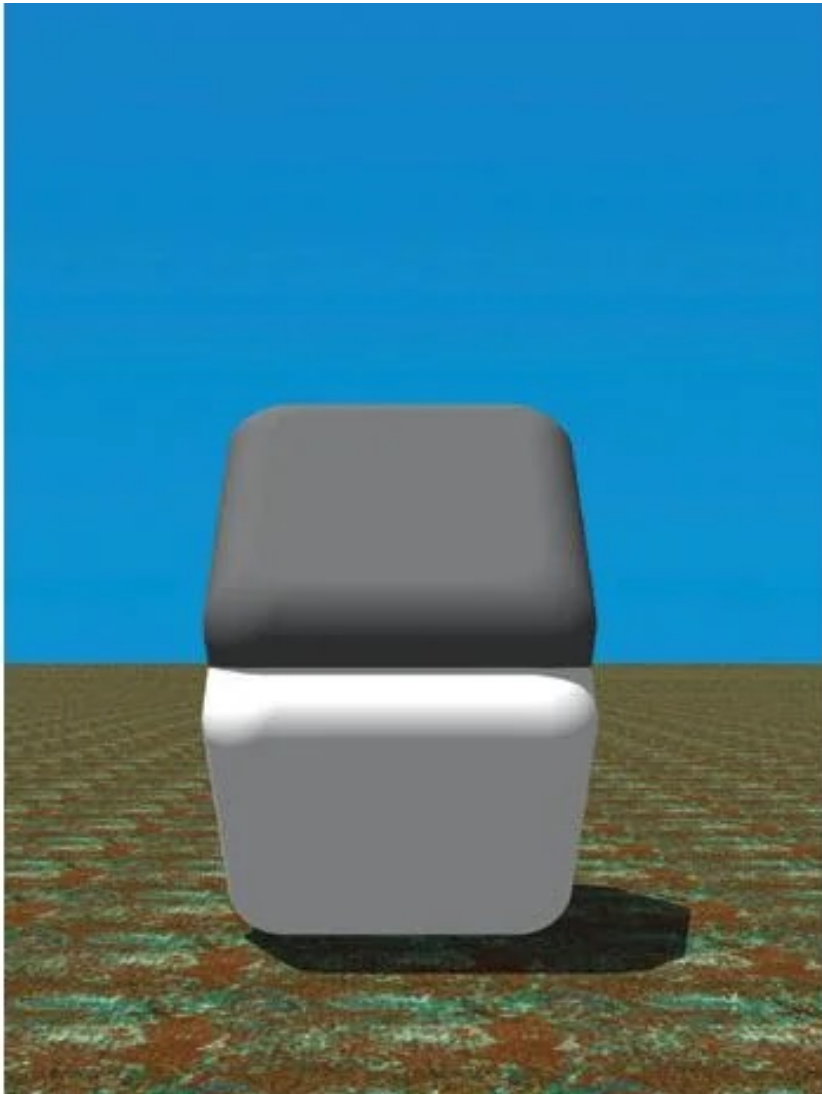


Our Brain As A Processor



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From: <https://slate.com/technology/2013/12/optical-illusion-shades-of-gray.html>



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Do you exercise implicit bias? I do. How do I know? I took the Implicit Association Test (IAT) test: implicit.harvard.edu/implicit.

Harvard IAT test: Millions of participants. 70-90% show gender and/or race bias.

Want To Emphasize...

See https://www.Impartnership.org/sites/default/files/hank56_pg_icebreaker.pdf

- Unconscious bias refers to a bias we're unaware of, one that happens **outside our control**. It's a bias that happens automatically and is triggered by our brain making quick judgments and assessments of people and situations, influenced by our backgrounds, cultural environments and personal experiences outside our conscious awareness.
- **Unconscious bias in the workplace has profound negative consequences.**
- **Encouraging: Studies show that being aware of and acknowledging one's own implicit bias helps counteract implicit bias.**

Selected “Categories” Of Implicit Bias

Age bias

This means favoring or penalizing someone based on their age.

Color/culture bias

This is judging someone based on the color of their skin or hair or on the culture they come from.

Gender bias

Gender bias is the tendency to prefer one gender over another.

Height bias

Tall (but not too tall) people tend to attract positive bias.

Name bias

This is a bias based on names. For example, a manager receives a CV and, instead of focusing on the skills and experiences, they focus on the name at the top and whether they can pronounce the name or not.

Implicit Name Bias

From <https://symondsresearch.com/unconscious-bias-quiz/>

A British study found that job applications with a British sounding name received a 24% positive response rate from employers.

What positive response rate did candidates with the same CVs (resumes), but non-British sounding names receive?

- A: 24%, the same as applicants with British sounding names.
- B: 20%
- C: 15%

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C – 15%

A 2017 study by Anthony Heath and Valentina Di Stasio found that, on average, nearly one in four applicants from the majority group, i.e. with British sounding names (24%), received a positive response* from employers.

As for people with non-British sounding names, only 15% of them received a positive response despite having **identical resumes and cover letters.**

(*By ‘positive response’, the researchers meant any reply suggesting a genuine interest in the applicant, such as invitations to job interviews, requests to provide additional information on skills or previous experience, to complete a test or to schedule a phone appointment with the employer.)

Want To Reiterate: Most Of Us Have Implicit Bias

C.A. Moss-Racusin et al., PNAS 109, 16474 (2012):

“In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was **randomly assigned either a male or female name**—for a laboratory manager position.

Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant.

The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student.”

A Four-Minute Small-Group Discussion

As a small group, identify three (or more) things that you can do to combat unconscious bias

- while listening to presentations of fellow REU students
- while working with others in your research group
- while taking classes in the fall
- while voting for the next SPS president
- while forming a study group
- while...

What To Do?

- **Encouraging: Studies show that being aware of and acknowledging one's own implicit bias helps counteract implicit bias.**
- E.g., I. Regner et al., Nature Human Behaviour 3, 1171 (2019), “Committees with implicit biases promote fewer women when they do not believe gender bias exists” (based on real-world, not mock data).
- “...annual nationwide competition for elite research positions.
- Findings reveal that committees with strong implicit gender biases promoted fewer women at year 2 (when committees were not reminded of the study) relative to year 1 (when the study was announced) if those committees did not explicitly believe that external barriers hold women back.
- When committees believed that women face external barriers, implicit biases did not predict selecting more men over women.
- **This finding highlights the importance of educating evaluative committees about gender biases.”**

What To Do?

- “...the present findings support ‘habit-breaking interventions’ that involve (1) making committee members aware of implicit biases; (2) making them able to understand the consequences of these biases; and (3) providing them with effective strategies to reduce the impact of implicit biases. “
- “As suggested by the present research, even committees whose members hold strong gender biases might be prevented from acting on them when they feel more accountable for making unbiased decisions (here, at year 1) but might also exhibit reactance when no longer scrutinized (here, at year 2).
- **The efficiency of educating committees about gender biases may therefore be maximized when combined with strong accountability measures.”**

Short Summary / Take-Home Message

- **Most of us have implicit bias.**
- **Acknowledging that we do have implicit bias is a first step toward combatting implicit bias.**
- **Using agreed upon rubrics to evaluate applicants, presentations, performance,... can go a long ways in actively counteracting implicit bias.**
- **Be accountable (write down reasons) and challenge yourself.**
- **Learn about “other(s)”: other cultures, religions, beliefs, individuals of a different race, individuals from different countries, individuals with different sexual orientation identities,....**

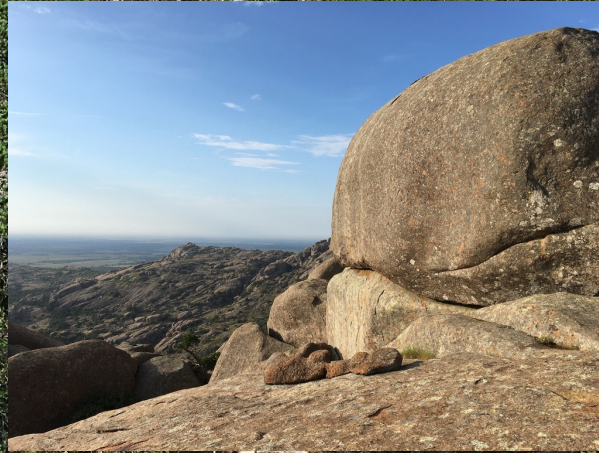
A Few Personal Thoughts

Disclaimer: what has supported and helped me might not help you --- but it might serve as an inspiration.

Three possible pieces of advice:

- Cultivate a network of friends who you can talk to and argue with and who support you.
 - In college: fellow physics undergraduate students, housemates.
 - As a visiting student at UC Berkeley: hiking friends, a poet, a nurse in training, a programmer,...
 - As a postdoc: a social worker, a chemist, an architect, a linguist,...
- Cultivate a network of role models / people whose advice you treasure.
 - In high school: my history teacher.
- Be passionate about something other than physics and astronomy.

Any questions, comments, discussion?



What Do You See?



From:
<https://www.techeblog.com/ice-pancakes-why-scotland-uk/>

Ice pancakes recently showed up on the River Bladnoch in Galloway, Scotland due to the unexpected cold weather in the UK. They are normally found around Antarctica, Canada and most notably, Lake Michigan. For these to form, they require some specific weather conditions, such as the optimal temperature and in areas with a bit of wave action.

This phenomenon occurs on rivers when frozen foam on its surface gets trapped in a spiraling eddy current. As sections of this frozen foam hits these swirling discs, they form into these flat pancakes that continue to grow between 8" – 79". However, on open bodies of water, these pancakes form as surface ice gets broken up and waves cause the chunks to smash against each other.

Ice Pancakes in Oklahoma

