Unconscious Racial Bias in Healthcare and Medical School Admissions:
An Invisible Social Determinant of Health

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Associate Dean for Admissions
Associate Professor of Medicine
(Cardiovascular Medicine)
Two patients, same dx, same sx, same hx, same objective findings …

The White patient is likely to receive a higher quality of patient-centered care …
Definitions

- **Implicit bias**: A positive or negative mental attitude towards a person, thing, or group that a person holds at an unconscious level (outside of conscious control).

- **Explicit bias**: A positive or negative mental attitude towards a person, thing, or group that a person is aware of and is under conscious control.

- **“White Preference” on the Race IAT**: negative attitude towards Blacks and preference for White. Association of the image of a Black person with negative feelings and the image of a white person with positive feelings.
A Word About *Implicit Bias*

- We all have implicit biases: it is a normal response of the brain

- Implicit bias can be tested for in a number of ways, the Implicit Association Test (IAT) is the most widely available, easily reproduced test

- Implicit biases have been associated with discriminatory behaviors in the education, criminal justice, and health care systems
The Implicit Association Test (IAT)

- Measures the relative strength of associations between pairs of concepts
- Stronger implicit associations – less time to pair, and fewer matching errors

Dr. Anthony Greenwald

Photo source: http://faculty.washington.edu/agg/bio.htm
Implicit White Race Preference ≠ Racism
Racism:

A conscious decision to attribute negative features to a racial or ethnic group (e.g., “I don’t like being around Black people because they are dangerous”)

Implicit (Unconscious) Racial Bias:

An unconscious coupling of a Black face with “DANGER”
Origins of Our Associations

When concepts are frequently paired together, your brain becomes conditioned to see them as connected, thus causing you to form an association between the concepts.

Association Formation

Unbiased Perceptions and Associations
Association Formation
Videos
Implicit Bias in Action: Examples

- **Education:** When exposed to identical facial expressions (differing degrees of corner of mouth turned up) on photos of children, White teachers more likely to perceive certain facial expressions as “angry” or “aggressive” in Black as opposed to White children.*

- **Education/School discipline:** OH state average for disciplinary actions. 23 actions/100 students statewide, for minority students, 68 actions/100 students.


Implicit Bias in Action: Examples

- Criminal Justice: Jurors shown evidence of a robbery and photos of alleged perpetrator (one Black, one White) more likely to think the evidence indicated guilt when the alleged perpetrator was Black. **

- Police officer lethal shooting exercise/game. Officers more likely to “shoot” unarmed AA target, less likely to “shoot” armed White target.***

Biases in Medical Professionals

- Like all people, physicians and other medical providers possess implicit biases.

  - Pediatricians (Sabin et al., 2008)
  - Residents (Penner et al., 2010)
  - Medical doctors (Sabin et al., 2009)
  - Primary care providers (Blair et al., 2013a)
  - Primary care clinicians (Blair et al., 2013b; Cooper et al., 2012)
  - Medical, pharmacy, and nursing students (White-Means et al., 2009)
Physicians’ Implicit and Explicit Attitudes About Race by MD Race, Ethnicity, and Gender

Sabin, Nosek, Greenwald, Rivara


- “. . . Implicit preference for White Americans was strong among all MD groups except for African American MDs”

- “White MDs showed the strongest implicit preference for Whites”

- “African American MDs, on average, did not show an implicit preference for either White Americans or Black Americans”
Does unconscious “White Preference” among MDs translate into patient care?

“Implicit White Preference” on the Race IAT: negative attitude towards Blacks and preference for White. Association of the image of a Black person with negative attributes or feelings (fear, misery, danger, trouble, etc.) and the image of a white person with positive attributes or feelings (joy, happiness, warmth, safe, love, etc.)
How Biases May Manifest – Medical Context

- **Verbal dominance** - “indicator of the level of participation of the clinician relative to the patient in the dialogue”
  - Cooper et al., 2012
  - Hagiwara et al., 2013
  - Johnson et al., 2004
  - Penner et al., 2010

Disparities in Cardiovascular Care: Physician Bias?

• Clinical Vignette:

• “Mr. T is a 50 year old male smoker with HTN who presents to the ED with chest pain. Described as “sharp, stabbing” and located in mid sternum. He has had it about 3 hrs, it is now 8/10 in intensity. Vital signs and PE are normal. EKG shows 2 mm horizontal ST elevations in the anterior leads, but there is no prior EKG for comparison and there is not time for cardiac enzymes. You do not have access to a cath lab. He has no contraindications for thrombolysis.”

Results

- Implicit bias: White, Hispanic, Asian residents all associated Black pt with being less cooperative

- Black residents considered White and Black pts equally cooperative

- 30% of residents thought White pt was very likely to have CAD

- 40% of residents thought Black pt was very likely to have CAD
Results

- 60% of residents very likely to offer treatment to White pt
- 40% of residents very likely to offer treatment to Black pt
- Residents explicit (self-reported) bias about race and pt cooperativeness did not influence decision to give thrombolysis
- **Resident physician’s implicit negative bias about race was the strongest predictor of the decision not to treat**
The Effect of Race and Sex on Physicians' Recommendations for Cardiac Catheterization

“Men and whites were significantly more likely to be referred than women and blacks.”

Kevin Schulman, MD, et. al, NEJM, February, 1999
Other examples of the impact of unconscious bias on clinical decision making:

- Men more often recommended for knee replacement surgery than women with identical MRI evidence of joint destruction

- Hispanic children visiting ER less likely to receive narcotics to treat severe cancer pain than white children with same pain rating

- In EDs, black adults less likely (O.R. 0.56 - 0.67) than whites to be discharged with opioid Rx for back pain and abd pain, NOT long bone fx, kidney stones, or tooth abcess*

*Singhal A. PLOS One. Aug 2016
The Effects of Oncologist Implicit Racial Bias in Racially Discordant Oncology Interactions

- 18 Oncologists (non-Black) took the Black-White IAT
- Treatment of 112 Black pts several weeks later
- Office visits were recorded and “graded” by neutral observers
- Oncologists higher in implicit racial bias had shorter interactions
- Patients and observers rated these oncologists’ communication as less patient-centered

Penner. Journal of Clinical Oncology 34, no. 24 (August 2016)
How Do Patients Rate Their Interactions with Physicians with Implicit Bias?

Figure 1. Predicted ratings of clinicians as a function of their implicit bias (IAT) score and their patients’ ethnicity/race. White patients always served as the reference group (data not shown).

Ann Fam Med. 2013 Jan-Feb;11(1):43-52
How Biases May Manifest

Higher levels of implicit bias against a group have been associated with:

- Less positive interactions
- Allowing less speaking time
- Less smiling
- Fewer impromptu social comments
- Less visual contact
- More speech errors
- More speech hesitations
- More blinking

Implicit Racial Bias in Medical School Admissions?
Implicit Bias and Admissions Decision Making

- Physicians demonstrate the same levels of implicit White preference as do individuals in other professions.
- Medical school admissions committees are composed largely of physicians.
- If implicit white preference is present on admissions committees to a significant degree, it could disadvantage Black/African American applicants.
- Little is known about implicit racial bias amongst medical school admissions committee members.
Implicit (Unconscious) Bias in Medical School Admissions

Methods

- In August 2012, all 140 members of The Ohio State University College of Medicine Admissions took the Implicit Association Test (IAT) in 3 areas

  - Black-White IAT
  - Male-Career/Female-Home and Family Stereotype IAT
  - Heterosexual-Homosexual IAT
The Implicit Association Test (IAT)

- Inventor of IAT
- Present for discussion of OSUCOM Admissions Committee IAT results
- Discussed Implicit Bias, IAT, and strategies to reduce IB

Dr. Anthony Greenwald

Photo source: http://faculty.washington.edu/agg/bio.htm
Implicit (Unconscious) Bias in Medical School Admissions

**Methods**

- Prior to beginning the 2012-2013 cycle, aggregate results of the IAT and strategies to reduce implicit bias were presented and discussed with the committee.

- At the end of the 2012-2013 cycle, all committee members were sent an anonymous survey to record their impressions of the IAT exercise and its impact on the admissions cycle.
Overview

7,000 + Applications

SCREENERS

Invite to Interview (Approx. 675-750)

Do Not Invite

INTERVIEWED BY ADMISSIONS COMMITTEE

Accept

Defer

Reject

Post Bac
IAT Male-Career Stereotype

- Test determines unconscious level of “preference” for linkage of male with career and woman with home/family.

- Implies that those with scores higher than the norm are *unconsciously* more “comfortable” with pictures of men in career roles and women in domestic roles and uncomfortable with the reverse.
IAT: Male-Career Stereotype

Which of these photos does your unconscious mind “prefer?”
Implicit Bias
(Unconscious Preference for Association of Man with Career, Woman with Home/Family)

- All Students (men and women): 65%
- All Faculty (men and women): 69%
- All Men (faculty and students): 50%
- All Women (faculty and students): 100%

Implicit Bias
Does the Reason for the Bias Matter?

- If the person with the bias . . .
  - Is in charge of deciding who gets hired/fired
  - Is in charge of deciding who gets promoted
  - Is in charge of deciding who gets into medical school
Study:
“Science Faculty’s Gender Bias Favor Male Students”

- Randomized, double blind study
- Academic science faculty (n=127) asked to review the application of a student for lab manager position
- Applications were identical; only the gender changed
- Faculty asked to rate: competence, hireability, willingness to mentor the new hire, and to suggest a starting salary

Moss-Racusin.PNAS. 2012
Study:
“Science Faculty’s Gender Bias Favor Male Students”

Fig. 1. Competence, hireability, and mentoring by student gender condition (collapsed across faculty gender). All student gender differences are significant ($P < 0.001$). Scales range from 1 to 7, with higher numbers reflecting a greater extent of each variable. Error bars represent SEs. $n_{\text{male student condition}} = 63$, $n_{\text{female student condition}} = 64$.
### Study: “Science Faculty’s Gender Bias Favor Male Students”

Table 1. Means for student competence, hireability, mentoring and salary conferral by student gender condition and faculty gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>d</th>
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</thead>
<tbody>
<tr>
<td>Competence</td>
<td>4.01&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(0.92)</td>
<td>4.1&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(1.19)</td>
<td>3.33&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(1.07)</td>
<td>3.32&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(1.10)</td>
<td>0.71</td>
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<tr>
<td>Hireability</td>
<td>3.74&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(1.24)</td>
<td>3.92&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(1.27)</td>
<td>2.96&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(1.13)</td>
<td>2.84&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(0.84)</td>
<td>0.75</td>
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<tr>
<td>Mentoring</td>
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<td>(1.11)</td>
<td>4.73&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(1.31)</td>
<td>4.00&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(1.21)</td>
<td>3.91&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(0.91)</td>
<td>0.67</td>
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<tr>
<td>Salary</td>
<td>30,520.83&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(5,764.86)</td>
<td>29,333.33&lt;sub&gt;a&lt;/sub&gt;</td>
<td>(4,952.15)</td>
<td>27,111.11&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(6,948.58)</td>
<td>25,000.00&lt;sub&gt;b&lt;/sub&gt;</td>
<td>(7,965.56)</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Moss-Racusin.PNAS. 2012

- Data from NY State Survey of Residents Completing Training (Ctr for Healthcare Workforce-SUNY Albany)

- Survey Conducted annually since 1998

- Self reported salary of physicians just completing training and whose primary activity is pt care

- Sample: 4,918 men, 3,315 women

Sasso. Health Affairs. 2011

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Starting Salary Men</th>
<th>Starting Salary Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatrics</td>
<td>$125,343</td>
<td>$116,950</td>
</tr>
<tr>
<td>Family Med</td>
<td>$147,874</td>
<td>$139,504</td>
</tr>
<tr>
<td>Cardiology</td>
<td>$228,188</td>
<td>$204,671</td>
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<tr>
<td>CT Surgery</td>
<td>$241,371</td>
<td>$214,268</td>
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<tr>
<td>EM</td>
<td>$218,767</td>
<td>$206,114</td>
</tr>
<tr>
<td>Radiology</td>
<td>$250,079</td>
<td>$233,532</td>
</tr>
</tbody>
</table>

Sasso. Health Affairs. 2011
Black-White IAT

- First question (explicit preference):

  - “What best describes you?
    1. I prefer White Americans to Black Americans
    2. I like White Americans and Black Americans equally
    3. I prefer Black Americans to White Americans”

Then the IAT begins to test implicit bias
## Confirmation Bias

<table>
<thead>
<tr>
<th>Thomas Meyer</th>
<th>African American Male</th>
<th>3rd Year Associate</th>
<th>NYU Law School</th>
</tr>
</thead>
<tbody>
<tr>
<td>“needs lots of work”</td>
<td>“can’t believe he went to NYU”</td>
<td>“average at best”</td>
<td></td>
</tr>
</tbody>
</table>

15 errors found

<table>
<thead>
<tr>
<th>Thomas Meyer</th>
<th>Caucasian Male</th>
<th>3rd Year Associate</th>
<th>NYU Law School</th>
</tr>
</thead>
<tbody>
<tr>
<td>“generally good writer but needs to work on...”</td>
<td>“has potential”</td>
<td>“good analytical skills”</td>
<td></td>
</tr>
</tbody>
</table>

10 errors found

Reeves 2014 ([link](#))
Implicit Bias Testing: White Preference
OSU COM Admissions Committee 2012

"White Preference" displayed on Implicit Bias Testing

- Explicit-Women: 10%
- Implicit-Women: 52%
- Explicit-Men: 10%
- Implicit-Men: 64%
Implicit Bias Testing: White Preference
OSU COM Admissions Committee 2012

"White Preference" on Implicit Bias Testing

- Explicit-Medical Students: 10%
- Implicit-Medical Students: 52%
- Explicit-Faculty: 5%
- Implicit-Faculty: 69%
Implicit White Race Preference Measure (Cohen's d)

Cohen’s d: 0.2 = small effect, 0.5 = medium, 0.8 = large effect

Women: 0.32
Men: 0.7
Students: 0.38
Faculty: 0.82

higher levels of implicit bias against a group have been associated with:

- Less positive interactions
- Allowing less speaking time
- Less smiling
- Fewer impromptu social comments
- Less visual contact

- More speech errors
- More speech hesitations
- More blinking

How Do Patients Rate Their Interactions with Physicians with Implicit Bias?

Figure 1. Predicted ratings of clinicians as a function of their implicit bias (IAT) score and their patients' ethnicity/race. White patients always served as the reference group (data not shown).

Ann Fam Med. 2013 Jan-Feb;11(1):43-52
Questions about IAT Results:

- How Do Admissions Committee members feel about their individual results?
- Will it have a measurable impact?
Survey Results

• 100 of 140 (71%) completed the survey

• 67%: “Taking the IAT will reduce bias in admissions”

• 48%: “I was conscious of my individual IAT results when interviewing candidates in the next cycle”

• 21%: “Knowledge of my IAT results impacted my admissions decisions in the subsequent cycle”
Anonymous comments from committee members*:

- “I don’t believe the results of this “test”.
- “There are lots of older faculty on the committee that I assume would have these old-fashioned opinions”
- “I am insulted by this test. It states that I have a bias against Blacks, women, and homosexuals. I have many colleagues that fit these descriptions that I am very close to. I, myself, am a brown person. Rubbish!”
- “...My IAT said I prefer blacks over whites, yet I feel it would be inappropriate for me to try to compensate for that ...”

*OSUCOM Annual Survey, 2012-2013 Cycle
Anonymous comments from committee members*:

- “Looking at pictures and clicking buttons does not equal how one interacts with a human being. I am not convinced of any validity of this test.”

- “It is more likely it creates bias in that it implicitly encourages admission of minority candidates rather than focusing on the content of their character.”

- “I thought it might cause people to overcompensate – for example, if I’m slightly biased against black people, I might look over deficiencies I would otherwise flag because I’m “trying” not to be racist.”

*OSUCOM Annual Survey, 2012-2013 Cycle
The percentage of URM (Hispanic, African American, American Indian) students in the class reached an all time high (20%) after the IAT exercise . . .
## Admissions Statistics

<table>
<thead>
<tr>
<th>Admissions Cycle</th>
<th>Total URM Applicants</th>
<th>Total # URMs interviewed</th>
<th># URMS offered acceptance</th>
<th>New URM enrollees</th>
<th>Yield (Enrollees/Offer x 100)</th>
<th>% URMS in entering class</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-2012</td>
<td>876</td>
<td>173 (20%)</td>
<td>56 (32%)</td>
<td>24</td>
<td>43%</td>
<td>17%</td>
</tr>
<tr>
<td>2012-2013</td>
<td>1,038</td>
<td>200 (19%)</td>
<td>57 (29%)</td>
<td>30</td>
<td>53%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Hypothesis …

2011-2012
- Implicit Bias Present but Unrecognized
- URMs interviewed
- URMs perceive mediocre climate
- 43% of URMs matriculate

2012-2013
- Implicit Bias Revealed
- Committee sensitized to IB--go into “recruitment mode”
- URMs perceive inclusive climate
- 53% of URMs matriculate
How Do Patients Rate Their Interactions with Physicians with Implicit Bias?

Figure 1. Predicted ratings of clinicians as a function of their implicit bias (IAT) score and their patients’ ethnicity/race. White patients always served as the reference group (data not shown).

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Did URM interviewees perceive a different climate after committee members shown their IAT scores?

- Comments from committee members after the IAT exercise (before the 2012-2013 cycle):

  - “Made me more cognizant of my prejudices entering the interview season”

  - “It allows us to consciously be careful not to execute those underlying biases”
Implicit Racial Bias in Medical School Admissions
Quinn Capers IV, MD, Daniel Clinchot, MD, Leon McDougle, MD, and Anthony G. Greenwald, PhD

Abstract

Problem
Implicit white race preference has been associated with discrimination in the education, criminal justice, and health care systems and could impede the entry of African Americans into the medical profession, where they and other minorities remain underrepresented. Little is known about implicit racial bias in medical school admissions committees.

Approach
To measure implicit racial bias, all 140 members of the Ohio State University College of Medicine (OSUCOM) admissions committee took the black–white implicit association test (IAT) prior to the 2012–2013 cycle. Results were collated by gender and student versus faculty status. To record their impressions of the impact of the IAT on the admissions process, members took a survey at the end of the cycle, which 100 (71%) completed.

Outcomes
All groups (men, women, students, faculty) displayed significant levels of implicit white preference; men ($d = 0.697$) and faculty ($d = 0.820$) had the largest bias measures ($P < .001$). Most survey respondents (67%) thought the IAT might be helpful in reducing bias, 48% were conscious of their individual results when interviewing candidates in the next cycle, and 21% reported knowledge of their IAT results impacted their admissions decisions in the subsequent cycle. The class that matriculated following the IAT exercise was the most diverse in OSUCOM’s history at that time.

Next Steps
Future directions include preceding and following the IAT with more robust reflection and education on unconscious bias. The authors join others in calling for an examination of bias at all levels of academic medicine.
Strategies to Reduce/Neutralize Implicit Bias

1. Common identity formation. Ask interviewee questions about interests and activities that you share in common (Focus on a shared, common identity between YOU and the interviewee)

2. Perspective taking. (Take the perspective of a member of the group against which you have the unconscious bias)

3. “Consider the opposite”. (When data seem to point to one conclusion, briefly look for data supporting the opposite conclusion before making a final decision.)

4. Counter-stereotypical exemplars. (Spend time with or focus on individuals you admire from groups against which you have a bias.)

Everyday Bias
for Healthcare Professionals

Quinn Capers, IV, MD
Associate Dean for Admissions
Associate Professor of Medicine (Cardiovascular Medicine)
Anonymous Pledges by Workshop Participants

• I will be working the night shift this weekend in the ED. When a pt comes in at 2 AM for a laceration. Instead of assuming they were “up to no good” I will “consider the opposite.”

• Since my team is very diverse I have been confronted with (and had to deal with) getting used to working with a large number of Muslims. I’m not used to or comfortable with their culture because of all the bad news around the world, so I think using this common identity formation strategy will help in this area.
Anonymous Pledges by Workshop Participants

• I’m fine at work, but in my neighborhood I have a harder time with black single males when I am out walking. I am going to try to assume positive intent and say “Hello” and not assume they may accost me. I will think of positive exemplars I know that are black males.

• On my next shift, I will most definitely see a pt dressed “like a thug.” I will take the perspective of the patient and try to imagine their life and background.
Summary

• Implicit racial bias is equally pervasive amongst physicians and laypersons

• Unconscious “White preference” is present and measurable in the medical school admissions process

• Unconscious Racial Bias in Health care can be a driver of racial health care disparities
Summary

• Racial bias measures were highest for men and faculty, lowest for women and students (implications for other committees)

• Unconscious racial bias is remediable (exposure to diversity is the key)

• Awareness of one’s unconscious biases is the first step ...