

## Boxing Out Unconscious Bias

Don't Let Your Unconscious Biases Put People in a Box!



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## Disclosures

I am a consultant or speaker for:

AI Optics, American Diabetes Association, Apellis, AstaReal, LKC Technologies, Macular Degeneration Association, OcuTerra, Regeneron

All relevant relationships have been mitigated

## Objectives

- Consider unconscious & tacitly conscious biases in clinical practice
- How bias can negatively affect patient experiences and outcomes - with a few examples
- Strategies for mitigating bias in optometric practice

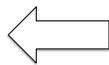
## What IS Bias?

- Prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair
- Biases can be positive or negative



## Benefits of Bias

- Bias is a recognized/well established feature of human psychology
- Represents a strategy for quickly/efficiently making sense of the world by categorizing others based on perceived attributes



WE LIVE IN A VERY COMPLEX WORLD

## Most Decision Making Is NOT Rational

System 1  
Intuition & instinct

System 2  
Rational thinking

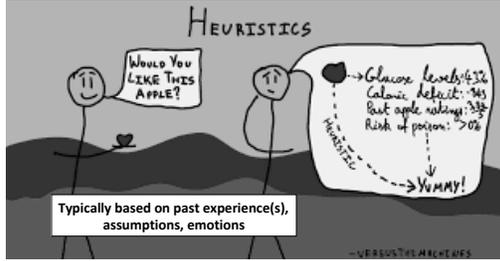
95%  
of decisions



5%  
of decisions

Designing with the Mind in Mind (Third Edition), 2021

Heuristics are mental shortcuts for quick problem-solving delivering results sufficient enough to be useful given time constraints



### HEURISTICS

A heuristic is a mental shortcut that enables people to make quick but less-than-optimal decisions.

#### OVERVIEW

Tversky & Kahneman created the concept of heuristics in the early 1970s. They describe them as "judgmental shortcuts that generally get us where we need to go – and quickly – but at the cost of occasionally sending us off course." Heuristics are both positive and negative for our lives. They can also be leveraged in marketing situations to manipulate people's decisions.

#### EXAMPLE

- **Availability Heuristic:** Making decisions based upon information that is easily available.
- **Anchoring Heuristic:** Making decisions based upon a subjective anchoring point that influences all subsequent thinking on a topic.
- **Affect Heuristic:** Making decisions based on emotions, moods, and "gut feelings" rather than logic.

HELPFULPROFESSOR.COM

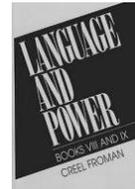
**A heuristic is a cognitive shortcut/tool that can result in bias if used inappropriately**

**Heuristics applied to groups of human beings INEVITABLY results in bias**

**Language itself can serve as a heuristic that facilitates unequal outcomes**

"The world in language is constituted based on reified [made real] constructs that inferiorize some groups as compared to others [Class/Race/Age/Sex/Species]"

Inequality is **BUILT INTO** everyday language



### Explicit vs Implicit Bias

- **Explicit Bias:** accompanied by discriminatory **language/verbiage**
- **Implicit Bias:** beliefs/attitudes resulting in **unequal treatment without awareness** (with unconsciousness) by those propagating such bias



**Less Obvious**

*'The reason your blood sugar is so poorly controlled is because you are obese'*

- My endo talking to a patient at the front desk

## Bias is a Spectrum



## Tacitly Explicit Bias

- Creation of an environment wherein some people/groups are structurally/environmentally advantaged/disadvantaged or respected/disrespected **in the absence of explicit language/signage** – can be with or without intention
  - **Cost of professional services & goods** effectively excludes a majority of poorer clients
  - Marketing materials displaying only Caucasian/young models tacitly disrespectful to non-White & older patients

## Dictionary

Definitions from [Oxford Languages](#) · [Learn more](#)



/ˈtaset/

adjective

understood or implied without being stated.

"your silence may be taken to mean tacit agreement"



WE ARE NOT  
MEDICARE,  
MEDICAID OR  
HMO PROVIDERS

My thanks to Adam Ramsey, OD for calling my attention to tacitly explicit biases in optometry practices

## Implicit Bias

- Beliefs/attitudes resulting in unequal treatment without awareness (with unconsciousness) by those propagating such bias
- Research shows that even HCPs who explicitly advocate for equal treatment of patients irrespective of age/class/race/gender/disability/religion etc. demonstrate implicit biases using the validated *Harvard Implicit Association Test (IAT)*

Sabin JA. Tackling Implicit Bias in Health Care. N Engl J Med. 2022 Jul 14;387(2):105-107.

## IAT

Measures the strength of association between concepts (e.g. race, gender, sexual orientation) and perjorative stereotypes (e.g. good/bad, clumsy/athletic)

The time it takes to select paired responses purports to demonstrate bias

Multiple criticisms, including the possibility that the test measures 'memory' more so than 'bias'

<https://implicit.harvard.edu/implicit/education.html>

- *Do real-world outcomes suggest bias in health care settings?*



### Implicit Bias In Health Care – Race & Gender

- Physicians commonly undertreat equivalent pain in non-White and female patients despite CPGs to the contrary

Hoffman KM, Trawalter S, Axt JR, Oliver MN. Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites. *Proc Natl Acad Sci U S A*. 2016 Apr 19;113(16):4296-301.

Guzikevits M, Gordon-Hecker T, Rekhtman D, Salameh S, Israel S, Shayo M, Gozal D, Perry A, Gileles-Hillel A, Choshen-Hillel S. Sex bias in pain management decisions. *Proc Natl Acad Sci U S A*. 2024 Aug

### Implicit Bias In Health Care – Race

- Black and Hispanic patients with type 1 diabetes (T1DM) are less than half as likely to be prescribed insulin pumps and continuous glucose monitoring devices, even after controlling for household income
- **These devices are linked to lower risk of diabetes complications**

Fantasia KL, Wirunsawanya K, Lee C, Rizo I. Racial Disparities in Diabetes Technology Use and Outcomes in Type 1 Diabetes in a Safety-Net Hospital. *J Diabetes Sci Technol*. 2021 Sep;15(5):1010-1017.

### Implicit Bias In Health Care - Weight

PCPs randomly assigned to evaluate the records of obese vs normal weight patients were more likely to rate the encounter as a 'waste of time' and indicated that they would spend 28% less time with an obese patient

Hebl MR, Xu J. Weighing the care: physicians' reactions to the size of a patient. *Int J Obes Relat Metab Disord*. 2001;25:1246-1252.

### Implicit Bias In Eye Care - Age

ECPs commonly dissuade patients > 40 years of age from initiating contact lens wear, despite studies showing similar rates of contact lens satisfaction in older vs younger patients

Young G, Veys J, Pritchard N, Coleman S. A multi-centre study of lapsed contact lens wearers. *Ophthalmic Physiol Opt*. 2002 Nov;22(6):516-27.

### Implicit Bias In Eye Care – Race & DME

After controlling for glycemia, BP, lipids, diabetes duration, education and income, Black patients in the US are more likely to develop DME & experience vision loss compared to White patients – **Black race is equivalent to a 3-point higher HbA1c level after all controls**

Haliyar R, Marwah S, Mittal S, Stein JD, Shah AR; SOURCE Consortium. Demographic and Metabolic Risk Factors Associated with Development of Diabetic Macular Edema among Persons with Diabetes Mellitus. *Ophthalmol Sci*. 2024 May 23;4(6):100557.

### Common Biases in Health Care

- Age
- Gender and sexual orientation
- SES/Class
- Race/ethnicity/language
- Religion
- Ability/disability
- Body weight & height
- Clinical diagnosis

**Some of these ARE  
Clinically Useful**

Vela MB, Erondu AI, Smith NA, Peek ME, Woodruff JN, Chin MH. Eliminating Explicit and Implicit Biases in Health Care: Evidence and Research Needs. *Annu Rev Public Health.* 2022 Apr 5;43:477-501.

### Obvious Diagnostic Examples Where Bias is Clinically Useful

- ◆ Age and Northern European ancestry are definitive risk factors for AMD
- ◆ Female gender is a definitive risk factor for dry eye, autoimmune uveitis, MS
- ◆ Black race is a definitive risk factor for POAG
- ◆ Obesity is a definitive risk factor for T2DM

### BUT...Bias Can Lead us Astray

- AMD rates range from 2.4% to 7.4% in Black Americans & 4-10% in Hispanic/Chinese Americans
- 18.6% of men > 75 have dry eye disease
- At age 80, population prevalence of POAG in White Americans is 73% of that in Black Americans
- **Excess weight is NOT the only risk factor for T2DM**

Racial Disparities in Glaucoma: From Epidemiology to Pathophysiology. *Mo Med.* 2022 Jan-Feb;119(1):49-54  
Prevalence of Diagnosed Dry Eye Disease in the United States Among Adults Aged 18 Years and Older. *Am J Ophthalmol.* 2017 Oct;182:90-98.  
Prevalence of age-related macular degeneration in 4 racial/ethnic groups in the multi-ethnic study of atherosclerosis. *Ophthalmology.* 2006 Mar;113(3):373-80.

### Implicit Bias in Diabetes Care

- Physicians report that patients with diabetes are more likely to have poor self-control, to be 'lazy,' to make inappropriate lifestyle choices, and to be less adherent to their treatment recommendations [both EXPLICIT & Implicit]

Adu MD, Malabu UH, Malau-Aduli AEO, Malau-Aduli BS. Enablers and barriers to effective diabetes self-management: A multi-national investigation. *PLoS One.* 2019 Jun 5;14(6):e0217771.

### Flapdoodle

**flapdoodle**  
noun [flap-dood-lee]  
nonsense; bosh.

- It is entirely patients' own fault if they develop type 2 diabetes due to poor lifestyle choices
- **FACT: There are myriad environmental factors beyond individual control that increase the risk of T2DM**

### Nature/Nurture in T2DM

- **Analysis of MESA/NHANES (n = 89K) shows that excess weight is the SINGLE biggest contributor to T2DM onset in the US, accounting for 30-53% of total risk** *J Am Heart Assoc.* 2021 Feb 16;10(4):e018799.

**BUT...**

- **Gene-wide associated studies (GWAS) show that T2DM is a polygenic disease with 30-70% heritability depending on specific phenotype**

*Nutrients.* 2022 Aug 4;14(15):3201.

### Nature/Nurture in T2DM

- ...about a fifth of the global T2DM burden is attributable to PM<sub>2.5</sub> (fine particulate matter  $\leq$  2.5 microns diameter)



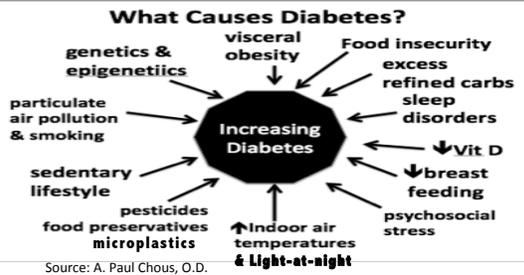
GBD 2019 Diabetes and Air Pollution Collaborators. Estimates, trends, and drivers of the global burden of type 2 diabetes attributable to PM<sub>2-5</sub> air pollution, 1990-2019: an analysis of data from the Global Burden of Disease Study 2019. Lancet Planet Health. 2022 Jul;6(7):e586-e600.

### Nature/Nurture in T2DM

- **Food insecurity** is associated with DOUBLE the risk of T2DM and diabetic retinopathy
- Food insecurity is CAUSALLY linked to T2DM and poor glucose control
- Food insecurity is associated with consumption of highly processed, cheap foods, elevated cortisol, obesity and insulin resistance

Diabetes Care 2021 Jun; 44(6): e131-e132  
J Nutr. 2019 Jun 1;149(6):982-988.

### What Causes Diabetes? --- Everything!



### Bottom Line

- We have created a diabetogenic environment
  - **Obesity is not the only risk for T2DM**
    - 50% of individual risk for type 2 diabetes is unrelated to obesity
- 50% of obesity is attributable to environmental influences beyond individual choice

### Use of Tropes in Clinical Care

- “Trope” literally means “to turn toward”
- Refers to the languaged reduction of the whole of something/someone to a PART of that whole
- Patients are reduced to some/one of their characteristics as shorthand

### Examples of Conflating Human Beings WITH Their Diagnoses

- Myopes/hyperopes
- Cones
- Tropes
- Diabetics
- Blind



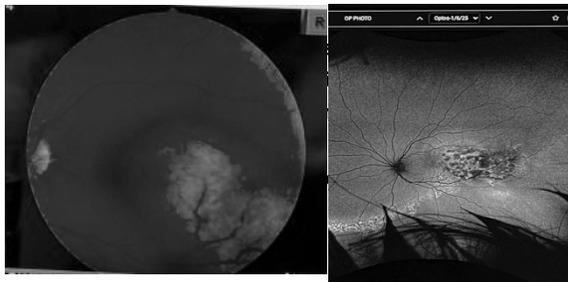
Patients don't just HAVE their diagnoses. they ARE their diagnoses

## Diagnostic Labeling

- Can result in poor outcomes by perpetuating stereotypes that influence medical decision-making and reduce patient agency
  - **Premature 'closure' of diagnostic alternatives**
  - e.g. tentative dx of 'Non-specific Lower back pain (LBP)' results in less Dx imaging than does 'arthritis' in patients with equivalent arthritis based on imaging

Park J, Saha S, Chee B, Taylor J, Beach MC. Physician Use of Stigmatizing Language in Patient Medical Records. JAMA Netw Open. 2021 Jul 1;4(7):e2117052

## 'There's No Way a Kid Has a Malignant Melanoma'



## Research Bias

- Under-representation of racial/ethnic minorities is common in most clinical trials
- This could negatively affect use of and response to therapy in some groups
  - e.g. Black DME patients appear to respond less well to initiation of anti-VEGF therapy

Turner BE, Steinberg JR, Weeks BT, Rodriguez F, Cullen MR. Race/ethnicity reporting and representation in US clinical trials: a cohort study. Lancet Reg Health Am. 2022 Jul;11:100252.

## How Can We Mitigate Implicit Bias in Health Care?

### Strategies to Combat Implicit Bias

**I**ntrospection  
**M**indfulness  
**P**erspective-taking  
**L**earn to slow down  
**I**ndividuation  
**C**heck your messaging  
**I**nstitutionalize fairness  
**T**ake two

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Wabes Kluwe  
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- Introspection: think about your own biases
- Mindfulness: reduce clinical stress/ breathe/yoga; be mindful of verbiage
- Perspective taking: put yourself in your patients' shoes
- Learn to slow down patient counseling
- Individuation: assess each pt's risk factors rather than/in addition to group risk
- Check messaging: avoid labels, use evidence-based care recommendations & recognize research limitations
- Institutionalize fairness/representation
- Take two moments to be humble and reduce power imbalances

## Does Implicit Bias Training Work?

**Group training and individual remediation of implicit biases are largely ineffective!**

-short-term reduction of bias and mitigation of healthcare disparities but little enduring effect

Sabin JA. Tackling Implicit Bias in Health Care. N Engl J Med. 2022 Jul 14;387(2):105-107.

Greenwald AG, Dasgupta N, Dovidio JF, Kang J, Moss-Racusin CA, Teachman BA. Implicit-Bias Remedies: Treating Discriminatory Bias as a Public-Health Problem. Psychol Sci Public Interest. 2022 May;23(1):7-40.

## Practical Strategies Against Bias

- **Identify outcomes disparities as an organization and actively work to reduce these (e.g. engage older pts to wear contact lenses, ↑ monitor/refer Black pts with DME, discontinue use of tropes/labels, use diverse marketing materials)**
- **Focus on objective findings and standardize time spent on patient education**
- **Diversify your staff and mentor under-represented patients to think about Optometry as a career**

- 14.4% of the US population are Black Americans
  - < 2% of ODs are Black Americans
  - 3% of optometry students are Black Americans
- 19.5% of the US population are Hispanic Americans
  - 5.2% of ODs are Hispanic Americans
  - 7.8% of optometry students are Hispanic Americans

<https://www.aoa.org/news/inside-optometry/member-spotlight/representation-matters-in-optometry?ss=oy>

### “It’s Important to Work With People that Look Like Me”

Racial/Ethnic concordance in health care between patients and providers is associated with better patient satisfaction & outcomes

Moore C, Coates E, Watson A, de Heer R, McLeod A, Prudhomme A. "It's Important to Work with People that Look Like Me": Black Patients' Preferences for Patient-Provider Race Concordance. *J Racial Ethn Health Disparities*. 2023 Oct;10(5):2552-2564

Gray B, Stoddard JJ. Patient-physician pairing: does racial and ethnic congruity influence selection of a regular physician? *J Community Health*. 1997 Aug;22(4):247-59

van Ryn M. Research on the provider contribution to race/ethnicity disparities in medical care. *Med Care*. 2002 Jan;40(1 Suppl):1140-51.

- We can ALL make a difference by mentoring under-represented Americans to go into health care careers, especially Optometry



### Risk Factors for DME Revisited

- 47K US adults with diabetes and no DME prospectively analyzed for DME over 9+/- 2 yrs (Sight Outcomes Research Collaborative aka SOURCE)
- **DR severity was biggest risk** (3.7X for NPDR/5.2X for PDR), followed by **Black race** (HR = 1.4), followed by averaged HbA1c (RR 1.15/unit increase) and SBP (RR 1.06 per 10 mmHg increase)
- dyslipidemia, diabetes subtype, BMI, smoking were not significant

**Black race was equivalent to having a 3-point higher HbA1c!!**

*Ophthalmology Science*, 2024

### Reasons for Racial Disparities in DR/DME

- Lack of screening for DR/access to care
- Having any insurance vs uninsured (HR = 1.51 for progression from NPDR to PDR for uninsured)
  - Baseline severity of NPDR mediated 41% of effect
- **Factors reported by DR patients**
  - unavailability of child care
  - Feeling disrespected by HCPs even after controlling for SES

*Transl Vis Sci Technol*. 2023 Mar 1;12(3):14.  
*J Natl Med Assoc*. 2022 Apr;114(2):171-181.  
*Ophthalmol Sci*. 2023 Dec 22;4(3):100458.

### Potential Solutions?

- Nationalized DR/DME telescreening programs
- Promotion of clinical trial diversity and education directed specifically at higher-risk groups
- Improved availability/affordability of child care
- Improved HCP racial/cultural sensitivity
  - **Prioritize cultural competence/kindness AND academic prowess in health care professional school admissions**
- Recruiting more Black, Native and Hispanic Americans to become ECPs

### ***That's Just The Way It Is....***

- Given the epidemic of diabetes, DR/DME must necessarily remain the leading cause of irreversible vision loss in working-age Americans
- **FACT: DR/DME was similarly the leading cause of irreversible vision loss in the UK as recently as a decade ago – IT NO LONGER IS**



### **NHS Diabetic Retinal Disease Screening Programme**

- Annual, largely undilated photographic screening is conducted on 2+ million/year
  - Images captured by optometrists or trained photographers → analyzed by certified readers
- **Rates of legal blindness due to DR/DME were reduced from 4K/year to 1K/year by 2016**

Acta Diabetol. 2017 Jun;54(6):515-525.

### **Telescreening Programs for DR**

- **Diabetic retinal disease is no longer the leading cause of new-onset blindness for working-age adults in the UK**
- AI will likely result in even better outcomes and reduce health care disparities

Liew, G, Michaelides, M, Bunce, C; A comparison of the causes of blindness certifications in England and Wales in working age adults (16 to 64 years), 1999 to 2000 with 2009 to 2010. *BMJ Open* 2014, 12 February 2014  
 Jacoba CMP, Doan D, Salongcay RP, Aquino LAC, et al. Performance of Automated Machine Learning for Diabetic Retinopathy Image Classification from Multi-field Handheld Retinal Images. *Ophthalmol Retina*. 2023 Aug;7(8):703-712.

### **How to do it Wrong: the US**

- DR/DME remain the leading causes of new-onset vision loss in adults of working age
- If the US wants to do better, we should be largely emulating the UK
- **Relying on PCP-referral & patient self-referral for eye care in diabetes has a 50-year history of failure**

### **We Have Some Advantages Against Bias**

- We all went to college
- We all went to graduate school
- We know how to learn
- Success as a health care professional depends on connecting and empathizing with our patients

**Life itself is your teacher, and you are in a state of constant learning.**  
*Bruce Lee*

### **Structure Your Patient Care & Practice in Accordance With The Golden Rule and Always Consider the Platinum Rule**

THE PLATINUM RULE:

Treat people the way THEY want to be treated!

**GOLDEN RULE**

**"The fundamental weakness of Western civilization is empathy."**

*— Elon Musk*

**"The death of human empathy is one of the earliest and most telling signs of a culture about to fall into barbarism."**

*— Hannah Arendt*

## Conclusions

- **Implicit & tacitly explicit bias is common in health care settings**
- **Implicit and Tacitly Explicit Biases are 'Hidden' by definition**
- **Reducing implicit bias at the individual level is impossible without active thinking**
- **Organizational/Structural changes are most effective at reducing biases to promote equitable health care outcomes**

## Thank You!

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