Mind Bugs: The Ordinary Origins of Bias

Fred Smyth
Department of Psychology
University of Virginia

May 6, 2013
Cornell University
Center for Teaching Excellence
Mostly good, sometimes bad.

We depend on autopilot.
It can lead us astray.
Simple Perception
Sound

Ba Ba?  Da Da?  Ga Ga?

McGurk & MacDonald, 1976, Nature
Color

GREEN    YELLOW
BLUE     GREEN
RED      RED
YELLOW   YELLOW
BLUE     BLUE
YELLOW   RED
RED      YELLOW
BLUE     BLUE
GREEN    GREEN
YELLOW   RED
GREEN    BLUE
RED      GREEN

Stroop, 1935, *Journal of Experimental Psychology*
Complex Perception
Who will you bet on?
Depends on who’s wearing red!

Hagemann et al., 2008, *Psychological Science*
An *Implicit Bias* Mind Bug

Beyond awareness and control
Reading Test
The procedure is quite simple. First, you arrange things into different groups. Of course, one pile may be sufficient, depending on how much there is to do. If you have to go somewhere else due to the lack of facilities, that is the next step; otherwise, you are pretty well set.
Make sense?
Washing Clothes
Washing Clothes

The procedure is quite simple. First, you arrange things into different groups. Of course, one pile may be sufficient, depending on how much there is to do. If you have to go somewhere else due to the lack of facilities, that is the next step; otherwise, you are pretty well set.
Schemas
Stereotypes

Explicit and Implicit

Conscious, intentional, subject to logic.

Unconscious, automatic, logic irrelevant.
Explicit Stereotype

How much do you associate “leadership” with females or males?

Strongly female ○
Moderately female ○
Slightly female ○
Neither female nor male ○
Slightly male ○
Moderately male ○
Strongly male ○
Stereotypes

Explicit and Implicit

Classic 1970s demonstration
Social Perception

Debbie

“Afraid”

Danny

“Angry”

Condry & Condry, 1976, Child Development
Social Behavior
Parents’ explanations of Museum Science Exhibits

What would parents tell us?

Crowley et al., 2001, Psychological Science
Paying Attention

Counting Passes

Directions

Neisser & Becklen, 1975, *Cognitive Psychology*
Stereotypes and Social Goals influence our attention (with and without intention!)
The invisible man

$N=209$ White American women

Imagine your ideal...

Counting passes;
Teams comprised of women.

The invisible man

The invisible man

Percentage Noticing Man

Man's Race

- White
- Black

Condition

- Romantic Partner
- Friend
- Neighbor
- Co-worker
- No Social Goal

Important Conscious Decisions
STEM Faculty’s judgments of lab manager applicant

Moss-Racusin et al., 2012, *PNAS*
STEM Faculty’s judgments of lab manager applicant

Applicant Gender

Male
Female

Salary Offered
STEM Faculty’s judgments of lab manager applicant

Male

Female

more “likeable”

Salary Offered

Applicant Gender
The *most* important Conscious Decisions
Looking Deathworthy

Eberhardt et al., 2006, *Psychological Science*
Eberhardt et al., 2006

Feature Stereotypicality

Black Defendants/White Victims

Black Defendants/Black Victims

Percentage Death Sentences

Less

More
Measuring Implicit Bias
(individually)
Implicit Association Test (IAT)

Say 'LEFT' for
- good
- Harvard

Say 'RIGHT' for
- bad
- Cornell

Greenwald et al., 1998, *JPSP*
Demonstration Options
March 2013

- Weight IAT
- Weapons IAT
- Gender-Science IAT
- Arab-Muslim IAT
- Age IAT
- Sexuality IAT
- Gender-Career IAT
- Religion IAT
- Disability IAT
- Asian IAT
- Presidents IAT
- Native IAT
- Skin-tone IAT
- Race IAT
Gender-Science on Project Implicit

Male
Liberal Arts

Female
Science

Female
Liberal Arts

Male
Science

THEN
<table>
<thead>
<tr>
<th>Gender</th>
<th>Liberal Arts</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Easier for 10%</td>
<td>Female Science</td>
</tr>
<tr>
<td>Female</td>
<td>No Difference for 20%</td>
<td>Male Science</td>
</tr>
<tr>
<td>Female</td>
<td>Easier for 70%</td>
<td>Male Science</td>
</tr>
</tbody>
</table>
Not one-size-fits-all
Gender-Science on Project Implicit

Number of Respondents

Implicit Science=Male / Arts=Female Stereotyping

Number of Participants

Gender - Science on Project Implicit

Science=Female       Science=Male Stereotype

70%

10%

0
Different for men and women?

Male Respondents

70%

Female Respondents

71%

11%

10%
Scientific Identity Matters

Women ($N=124,479$)

Men ($N=52,456$)

Implicit Science=Male (SDs from zero)

Major Field

Smyth & Nosek, 2013
Scientific Identity Matters

Women ($N=124,479$)

Men ($N=52,456$)

Implicit Science=Male (SDs from zero)

Major Field

Smyth & Nosek, 2013
Real-World Predictive Validity

- Voting Behavior
- Policy Support
- Mental Health
- Medical Decision Making
- Employment Discrimination
- Forensics
What to do?

1) Education, measurement, evaluation.
2) Humility.
I am objective

Others’ judgments are based on a logical analysis of the facts.

Others’ decision making is rational and objective.

Bias Blind Spot

Pronin et al., 2002, *PSPB*
"I think it, therefore it's true"

Uhlmann & Cohen, 2007
What to do?

1) Education, measurement, evaluation.
2) Humility.
3) Change them?

“...not yet been a convincing (to us) demonstration that interventions of the types investigated in research of the last decade will produce durable changes.”

Banaji & Greenwald, 2013
Implicit Leadership-is-Male stereotype undone by exposure to female leaders

Dasgupta & Asgari, 2004
Exposure to female profs

Female students

Leaders-are-male IAT (ms)

Coed college

Women’s college

Dasgupta & Asgari, 2004
Exposure to female profs

• Math-is-male IAT
• UVa students in *Differential Equations*

  **Women**: bias unchanged (already low)

  **Men**: bias reduced

Smyth, Mitrea, Melcher & Martin, 2013
What to do?

1) Education, measurement, evaluation.
2) Humility.
3) Change them?
4) Counteract them.

“Growth” mindset

Carol Dweck
Growth Mindset
(or Mind-is-Muscle)

Carol Dweck

- Why do beliefs about intelligence influence learning success?
- Is math a gift? Beliefs that put females at risk.
- Praise for intelligence can undermine children's motivation and performance
Praise Effort, not Intelligence

- 5th graders; *Standard Progressive Matrices*
- Part 1: 4-min on moderate diff. problems. Everyone told: “Wow, you did very well... That's a really high score.” (got > 80%)
- Random assignment to additional feedback:
  1. “You must be smart at these problems.”
  2. “You must have worked hard at these problems.”
  3. No additional feedback
- Choose type of problems for later (easy or challenging).

Mueller & Dweck, 1998
Praise Effort, not Intelligence

- **Part 2**: 4-minutes on harder problems.
- Everyone told: “...did a lot worse.” (got 50%)
- **Part 3**: 4-minutes again on moderate-diff problems, like first set.

Mueller & Dweck, 1998
Praise Effort, not Intelligence

Proportion choosing easy problems after Part 1

Study 1

Intelligence | Control | Effort

Type of Praise Given

Mueller & Dweck, 1998
Praise Effort, not Intelligence

Mueller & Dweck, 1998
Mindset Sources

• Parents, teachers, coaches, peers...

• Counterproductive:
  – “Wow, you are so smart!”
  – “You’re one in a million!”
  – “You’re brilliant, you got an A without studying!”
  – “I’m sorry you didn’t do well; maybe this isn’t your strength.”
Mindset Sources

• Productive:
  – “Wow, your studying really paid off!
  – “That’s great that you took on a challenge and mastered it”
  – “You really seemed to be enjoying what you were doing.”
  – “I’m sorry you didn’t do well. Let’s talk about how to work on doing better next time.”
Implicit nature-nurture mindsets affect math performance

Women

Nature causes primed

Tough Math Problems

Nurture causes primed

Dar-Nimrod & Heine, 2006, Science
What to do?

1) Education, measurement, evaluation.
2) Humility.
3) Change them?
4) Counteract them.
   – “Growth” mindset
   – “Belonging” mindset

Geoffrey Cohen
Belonging Mindset

Geoffrey Cohen

A question of belonging: Race, social fit, and achievement.

Relative Potential in Computer Sci

Friends=Belonging=Academic Confidence

more computer science potential than 50% of students

White Students

Black Students

Friends=Belonging=Academic Confidence

Relative Potential in Computer Sci

- List No Friends
- List Two Friends
- List Eight Friends

Study 2

College struggles are normative

- Alternative to group-based frame
- Cover story: Understand experiences and attitudes of freshmen...and create materials to help future students form accurate expectations.
- Survey of diverse, upper-class students
- “Invited” essay and video-taped speech
- Control: Development of social-political views

Success expectations next 7 Days

Matters Most when Going is Tough

Academic Fit

- Black Students, Control Condition
- Black Students, Treatment Condition

Low Adversity   Mod Adversity   High Adversity

Achievement Behaviors


Review sessions, office hours, study group meetings, emails to profs, questions asked in class, hours studying

1 hour 22 minutes more studying each day
Belonging Mindset

Values Affirmation
– Cohen et al. (2006, 2009), Science
Which of these values is most important to you?

- Being good at art
- Creativity
- Government or politics
- Independence
- Athletic ability
- Career
- Music
- Belonging to a social group (such as your community, racial group, or school club)
- Learning and gaining knowledge
- Spiritual or religious values
- Relationships with family and friends
- Sense of humor
Study Design

7th graders given list of values and asked to either:

**Self-affirmation condition:**
Pick your most important value and write about why it’s important to you.

**Control condition:**
Pick your *least* important value and write about why it might be important to someone else.

Cohen et al., *Science*, 2006; 2009
Middle School GPA Effect for 2 Years

Cohen et al., Science, 2006; 2009
Middle School GPA Effect for 2 Years

Cohen et al., *Science*, 2006; 2009
Condition

Cohen et al., *Science*, 2010

Cohen et al., *Science*, 2010
Recently suggested qualification of self-affirmation effects:

• **Self-Affirmation Can Enable Goal Disengagement**
  – Vohs et al. (2013)

• Depended on experience of success or failure in given task following self-affirmation

• “…self-affirmation aids letting go of recalcitrant goals.”
And more specification from Cohen et al: 

*Demystifying values-affirmation interventions: Writing about social belonging is a key to buffering against identity threat*

- Shnabel et al. (2013)
What to do?

1) Education, measurement, evaluation.
2) Humility.
3) Change them?
4) Counteract them.
   - “Growth” mindset
   - “Belonging” mindset
5) Corral them.
aka, “No-brainers”
Implicit biases most influential when...

• Criteria unclear
• Decisions made rapidly
• Decisions are complex
• Information is ambiguous or incomplete
• You’re stressed, tired.
Clear Evaluation Criteria
Michael vs. Michelle for Police Chief

<table>
<thead>
<tr>
<th>Street-smart</th>
<th>Book-smart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tough</td>
<td>Formally educated</td>
</tr>
<tr>
<td>Experience in rough neighborhoods</td>
<td>Good administrative skills</td>
</tr>
<tr>
<td>Good rapport with other officers</td>
<td>Administration experience</td>
</tr>
<tr>
<td>Risk taker</td>
<td>Politically connected</td>
</tr>
<tr>
<td>Good physical shape</td>
<td>Communicated well with media</td>
</tr>
</tbody>
</table>

Uhlmann & Cohen, 2005, *Psychological Science*
Protect against known biases

Hagemann et al., 2008, *Psychological Science*
Suspected biases

Goldin & Rouse, 2000, American Economic Review
And unknown biases

In my 340-student lecture class?
Time for Discussion?

1) Education, measurement, evaluation.
2) Humility.
3) Change them?
4) Counteract them.
   - “Growth” mindset
   - “Belonging” mindset
5) Corral them.
Thank you

- Brian Nosek, Irina Mitrea, Tai Melcher, Kate Ratliff, Dan Martin, Will Guilford, Ed Berger, Reid Bailey, Dana Elzey, Rich Price
- Project Implicit
- National Science Foundation REC-0634041
- UVa Learning Assessment Grants Program