Unconscious bias & challenges to fair assessment

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A recording of this talk is available here: www.utsc.utoronto.ca/vpdean/unconscious-bias
Unconscious bias & challenges to fair assessment

1. Patterns of representation

2. Schema & Unconscious bias
   - 6 case studies, Assessment challenges, gender & race

3. Moving forward
   - Structural
   - Personal
1. Parity (undergraduates): ~1985
2. Similarity (graduates): ~1985
3. Parity (graduates): ~2000

Figure 1. Growth in University Enrolment since the 1920s

Expert panel on women in university research, Council of Canadian Academies
Women are under-represented at the higher ranks.

- **22 years** after graduate enrollment similarity
- **7 years** after graduate enrolment parity

**Total % female faculty (2006): 38.7%**
Representation: patterns

<table>
<thead>
<tr>
<th>Aboriginal</th>
<th>South Asian</th>
<th>Chinese</th>
<th>Black</th>
<th>Arab/West Asian</th>
<th>Southeast Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3</td>
<td>3.7</td>
<td>3.9</td>
<td>4.2</td>
<td>2.8</td>
<td>1.3</td>
</tr>
<tr>
<td>2.1</td>
<td>3.3</td>
<td></td>
<td>1.6</td>
<td>1.3</td>
<td>0.7</td>
</tr>
<tr>
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<td></td>
<td>0.3</td>
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Percent of population

- Total Labour force
- University Teachers

Canadian Association of University Teachers, 2010

2006 Census, Statistics Canada
Academic leadership: patterns
Canada Research Chairs program

CRC 2003 (first year).
17% awarded to women (~30% of faculty were women*)
• Settlement with Canadian Human Rights Commission over charge of discrimination

Canada Excellence Research Chairs 2008 (first year).
0% (n=19) awarded to women
0% (n=36) of short-listed proposals from women
• Strengthening Canada’s Research Capacity: The Gender Dimension. 2012

*www.statcan.gc.ca
The higher in the ranks one looks, the fewer women are present in comparison to men in positions such as full professors and presidents of universities, leaders of government agencies, and CEOs of private sector companies.

*The expert panel on women in University research (2012)*

*After decades of efforts to diversify, corporate boards are 87.7% white and 84.5% male.*

*Zweigenhaft, RL. 2013. ‘Who Rules America?’*
Canadians value equity & diversity

Reflecting this diversity in our own community is uniquely valuable to the University as it contributes to the diversification of ideas and perspectives and thereby enriches our scholarship, teaching and other activities. We will proactively seek to increase diversity among our community members...

*University of Toronto Governing Council, 2006

And yet...

Under-representation is still a problem* in Canada in the professoriate, corporations, management/leadership, politics...

*http://www.catalyst.org/knowledge/visible-minorities-canada
Current patterns

Why?

- The pool
- Ability & Interest
- Paid-Work-life balance & institutional culture
- ‘The glass ceiling’
  - Biases in assessment

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Bias

Differential evaluation of one group and its members relative to another

Explicit/Conscious

Person is aware of his/her evaluation

Expression of bias is intentional

e.g. racism, sexism, homophobia

*modified from T De Mello

MCB Andrade 2016
“Sometimes the behavioral research leads us to completely change how we think about an issue. For example, many of our anti-discrimination policies focus on finding the bad apples who are explicitly prejudiced. In fact, the serious discrimination is implicit, subtle and nearly universal.”

David Brooks,
Schema & Unconscious bias

- **Schema**: categorical assessments of individuals and relationships between individuals

- **Shape expectations & evaluations**

- **Expectations & evaluations based on group identification lead to unconscious or implicit bias**
Bias

Differential evaluation of one group and its members relative to another

Implicit/Unconscious Bias:

- Person does not perceive or endorse evaluation

Expressions are:

- Not related to self-identified group of evaluator
- Unintentional, automatic
- Often contradictory to conscious beliefs

*modified from T De Mello

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**Implicit association tests**

- **Task**: instructed to associate images and words with categories
  - Consistent or contrary to stereotypes
- **Measurement**: variation in response speed & error rates

**implicit.harvard.edu/implicit**

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Anti-black implicit bias

Implicit association tests

Greenwald et al 1998
Anti-black implicit bias

Strong implicit bias for **black**

No bias

Strong implicit bias for **white**

- 1.0

>3 million scores (2002-2015)

Greenwald et al 1998
Anti-black implicit bias

Strong implicit bias for black

No bias 18%

Strong implicit bias for white

>3 million scores (2002-2015)

Greenwald et al 1998
1. Assessing excellence: gender bias

Fellowship applications
• Swedish Medical Research Council
• 1995 Research fellowship competition
• Scientific excellence*

Success:
8% of female applicants
24% of male applicants

Did women publish fewer high-quality papers?


MCB Andrade 2016
Calculate total impact:
  • # publications
  • Journal impact

Compare to reviewer scores
“...strongly suggests peer reviewers cannot judge scientific merit independent of gender.”
2. Assessing Talent: gender bias

Orchestra Auditions

Major orchestras in the USA

Pre-1970: < 10% women

www.maddison.com

2. Assessing Talent: gender bias

Orchestra Auditions

Major orchestras in the USA

Pre-1970: < 10% women

1970’s & 1980’s:

Auditions rather than ‘hand picking’ (1970’s/ 1980’s )

• assessment by a jury
• Adoption of ‘blind’ auditions

www.maddison.com

2. Assessing Talent: gender bias

Repeated measures:
Individuals who auditioned under both ‘blind’ and ‘not blind’ conditions

<table>
<thead>
<tr>
<th>Gender</th>
<th>Blind</th>
<th>Not blind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>816</td>
<td>445</td>
</tr>
<tr>
<td>Women</td>
<td>559</td>
<td></td>
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2. Assessing Talent: gender bias

Repeated measures:
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<td>Blind</td>
<td>N=816</td>
<td>N=559</td>
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<tr>
<td>Not blind</td>
<td>N=445</td>
<td>N=1102</td>
</tr>
</tbody>
</table>

3. Assessing Ability & Potential: anti-black bias

Performance assessment of managers
Three large companies (electronics, banking, communications)

Subjects:
Black & White managers matched for job function n = 748

Supervisors: evaluation of managers
• Job performance  ○ white managers > black managers
• Attribution of performance
• Career advancement prospects

Greenhaus & Parasuraman 1993
3. Assessing Ability & Potential: anti-black bias

Performance assessment of managers

Attribution of performance

• To ABILITY / EFFORT:
  • white managers > black managers

• To HELP from others:
  • black managers > white managers
3. Assessing Ability & Potential: anti-black bias

Performance assessment of managers

Attribution of performance

• To ABILITY / EFFORT:
  • white managers > black managers

• To HELP from others:
  • black managers > white managers

Career advancement prospects

• white managers > black managers
Other studies: Anti-Black Bias & compromised assessment

- Assessment of leadership ability of black leaders (vs. whites)*
  - Rosette et al 2008; Knight et al 2003

- Career mobility of black executives (vs. whites)
  - Guest, 2016

- Response to requests for graduate mentorship by black & white students*
  - Milkman et al 2015

- Recognition of errors by blacks vs. whites*
  - Arvin et al 2014

- Assessment of pain, treatment & empathy for black patients (vs. whites)
  - Chapman, Kaatz & Carnes, 2013

- Distinguishing armed or unarmed black civilians (vs. whites, hispanics, asians)*
  - Sadler, Correll, Park, & Judd, 2012

*No effect of race of evaluator

And many, many more...
Other studies: Gender Bias & compromised assessment

(by both male & female assessors)

• Assessment of leadership ability/qualities (by both male & female assessors) (Geis et al 2006, Scott & Brown 2006, Rojahn & Willemsen, 1994)

• Reactions to leaders (by both male & female assessors) (Eagly et al 1995; Butler & Geis 1990)

• Paper acceptance rates (Tregenza 2002) (‘Natural’ Experiment)

• Letters of recommendation (Trix & Psenka, 2003) (Experimental)

• Student evaluations of instructors (by both male & female assessors) (Basow 1998; McPherson et al 2009; Reid, 2010, MacNell et al 2014)

• Assessment of scientific competence (Wenneras & Wold 1998; Steinpreis et al 1999, Moss-Racusin et al. 2012) (Experimental)

• Invitations to give plenary talks (Tower 2008)

• Nominations (& elections) to prestigious societies, (award) of prestigious prizes (Lincoln et al, 2012; EOS editorial, Am.Geophysical Union, 2011).

And many, many more...
Experimental approaches to measuring bias

Evaluation of behaviour
- Actors/confederates & scripts
- Recordings of interactions

Evaluation of documentation
- CV / Resume
- Narratives

Experimental assignment of Gender/ Race x role

Standard scenarios or documents
Modify gender / race of primaries
4. Assessing potential: anti-black bias

Experiment
Trained confederates
Posing as applicants:
  • Black
  • Latino
  • White

Applied for 340 entry-level jobs

1. All young men, matched for physical/verbal characteristics
2. Assigned similar resumes

New York City
Pager et al 2009

Also: Oreopoulos and Dechief, 2012 (Vancouver, Toronto, Montreal)
4. Assessing potential: anti-black bias

Call-backs or job offers

New York City
Pager et al  2009

Equal to white applicants

see: Oreopoulos, 2009
5. Assessing performance: anti-black bias

Law partner’s assessment of writing competence

Identical legal memos with 22 deliberate errors

• task: assess ‘writing competency of young attorneys’

<table>
<thead>
<tr>
<th>Name: Thomas Meyer</th>
<th>Name: Thomas Meyer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seniority: 3rd Year Associate</td>
<td>Seniority: 3rd Year Associate</td>
</tr>
<tr>
<td>Alma Mater: NYU Law School</td>
<td>Alma Mater: NYU Law School</td>
</tr>
<tr>
<td>Race/Ethnicity: African American</td>
<td>Race/Ethnicity: Caucasian</td>
</tr>
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Arvin et al 2014, Nextion
5. Assessing performance: anti-black bias

The graph shows the proportion of errors found among African American and Caucasian populations. The African American population has an 81% error rate, while the Caucasian population has a 57% error rate.

Arvin et al 2014, Nextion
5. Assessing performance: anti-black bias

No effect of race or gender of assessor

“average at best”

Overall quality

- African American: 64%
- Caucasion: 82%

“generally good writer but needs to work on...”

Proportion of errors found

5. Assessing performance: anti-black bias

No effect of race or gender of assessor

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“generally good writer but needs to work on...”

Proportion of errors found

Arvin et al 2014, Nextion
6. Assessing Leadership & Gender Schema

Consistent results across studies = penalty for ‘role incongruity’

<table>
<thead>
<tr>
<th>Beliefs about males:</th>
<th>Beliefs about leaders:</th>
<th>Beliefs about females:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated</td>
<td>Dedicated</td>
<td>Helpful</td>
</tr>
<tr>
<td>Determined</td>
<td>Determined</td>
<td>Caring</td>
</tr>
<tr>
<td>Assertive</td>
<td>Charismatic</td>
<td>Sympathetic</td>
</tr>
<tr>
<td>Competitive</td>
<td>Competitive</td>
<td>Kind</td>
</tr>
<tr>
<td>‘Agentic traits’</td>
<td></td>
<td>‘Communal traits’</td>
</tr>
</tbody>
</table>

- Schema (stereotypes) affect our judgement
- e.g., agentic traits seen as negatives when exhibited by women

*modified from D. Zweig Rojahn & Willemsen, 1994, Eagly & Karu 2002
6. Assessing Leadership: gender bias

Solo-leader or Co-leader (scripted) conditions x gender

Assessed attributes of leaders:

Strengths
- Ability, skill, intelligence
- Warmth & sensitivity

Weaknesses
- Bossy & Dominating
- Too emotional

Level of participation
- Fewer contributions desirable

Butler & Geis, 1990
6. Assessing Leadership: gender bias

Solo-leader or Co-leader (scripted) conditions x gender

Assessed attributes of leaders:

Strengths
• Ability, skill, intelligence  Females << Males
• Warmth & sensitivity  Females > Males

Weaknesses
• Bossy & Dominating  Females >> Males
• Too emotional  Females >> Males

Level of participation
• Fewer contributions desirable  Females >> Males

Butler & Geis, 1990

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### Moving forward

<table>
<thead>
<tr>
<th>Personal</th>
<th>Structural</th>
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<tbody>
<tr>
<td><strong>Targets, monitoring</strong></td>
<td><strong>Diversified assessment groups</strong></td>
</tr>
<tr>
<td><strong>Education about bias</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Source monitoring</strong></td>
<td><strong>Recognize signs of bias</strong></td>
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Moving forward: Structural

Institutional responses:
1. Equity of outcomes monitored
   • Evaluated relative to targets
2. Balanced review boards*
3. Reviewers educated about bias
   (4. Blind review)

Sandstrom & Hallsten 2008, Arvin et al 2014
Moving forward: **Structural**

Swedish Medical Research Council Grant applications (2004)

Reviewer score

Gender-blind Total Impact

Sandstrom & Hallsten 2008
Moving forward: **Structural**

Canada Research Chairs

<table>
<thead>
<tr>
<th>27%</th>
<th>73%</th>
</tr>
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<tbody>
<tr>
<td><img src="image1.png" alt="Female Chairholders" /></td>
<td><img src="image2.png" alt="Male Chairholders" /></td>
</tr>
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Filled Canada Research Chairs Positions as of October 2014

- Total number of filled Canada Research Chair positions: 1,667
- Number of female chairholders: 449
- Number of male chairholders: 1,218

Source: Canada Research Chairs program

Moving forward: Structural

Canada Excellence Research Chairs

11% other under-represented groups [19% of Canadians]

0% → 3.7%
2008  2016


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Moving forward

University of Toronto has codified most aspects of best-practice for minimizing effects of bias

Policy is more effective if:

*Individuals* understand underlying issues

*Leaders* inspire a commitment to equity
Moving forward: personal

1. Consider (your own) implicit biases

implicit.harvard.edu
Recognizing unconscious bias can lead to behavioural compensation.
Green et al 2007

Here is your result:
Your data suggest a strong automatic preference for European Americans over African Americans.
2. Source Monitoring (self/others)

Justification of judgements/ assessments

• Evidence-based
  o Specific, detailed facts
  o No: ‘reading between the lines’

Relate facts & judgements to explicit criteria

• Identified in advance
  o Beware of unspecified ‘fit’
  o Be vigilant to reconstruction of merit criteria
    (e.g., Uhlmann & Cohen 2005)
• Ensure sufficient time for careful decision-making
  o Rushing = stronger effect of biases (e.g., Beattie et al 2013)
Moving forward: personal

3. Recognize potential signs of bias (meetings/letters)

- **Forms of address** (first names vs. titles)
  - “Jane was an asset to our department.”
  - –vs.– “Dr. Smith was an asset to our department.”

- **Gendered adjectives** (emotion/effort vs. outcomes)
  - “Dr. Sarah Gray is a caring, compassionate physician”
  - –vs.– Dr. Joel Gray has been very successful with his patients”

Trix & Psenka 2003
3. Recognize potential signs of bias (meetings/ letters)

- Use of doubt raisers

“...although labour challenges resulted in production delays, the projects were completed on time...”

-vs.- “...labour challenges were overcome to ensure deadlines were met...”

• “...although problems in the lab resulted in relatively few publications, her results are high-impact...”

-vs.- “...he has overcome technical challenges to produce high-impact contributions...”

Trix & Psenka 2003
3. Recognize potential signs of bias (meetings/letters)

- Querying attribution of success to candidate vs. team/luck/others

- Revealing or discussing irrelevant details: race/gender/personal life

Greenhaus & Parasuraman 1993

Trix & Psenka 2003
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**Useful resources:**
- [http://kirwaninstitute.osu.edu](http://kirwaninstitute.osu.edu)
- [http://wiseli.engr.wisc.edu](http://wiseli.engr.wisc.edu)
- [https://managingbias.fb.com](https://managingbias.fb.com)