

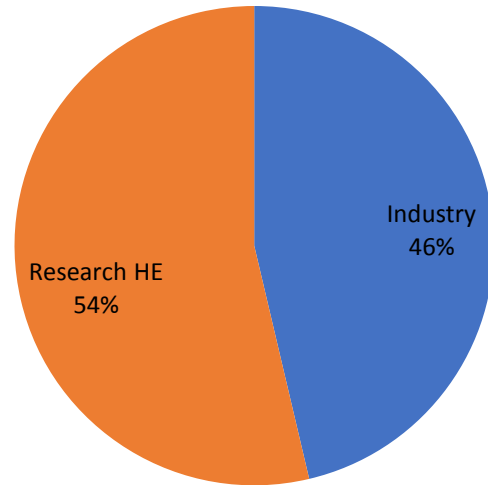
What NExT? The dangers of microdiscriminations

Professor Averil Macdonald OBE



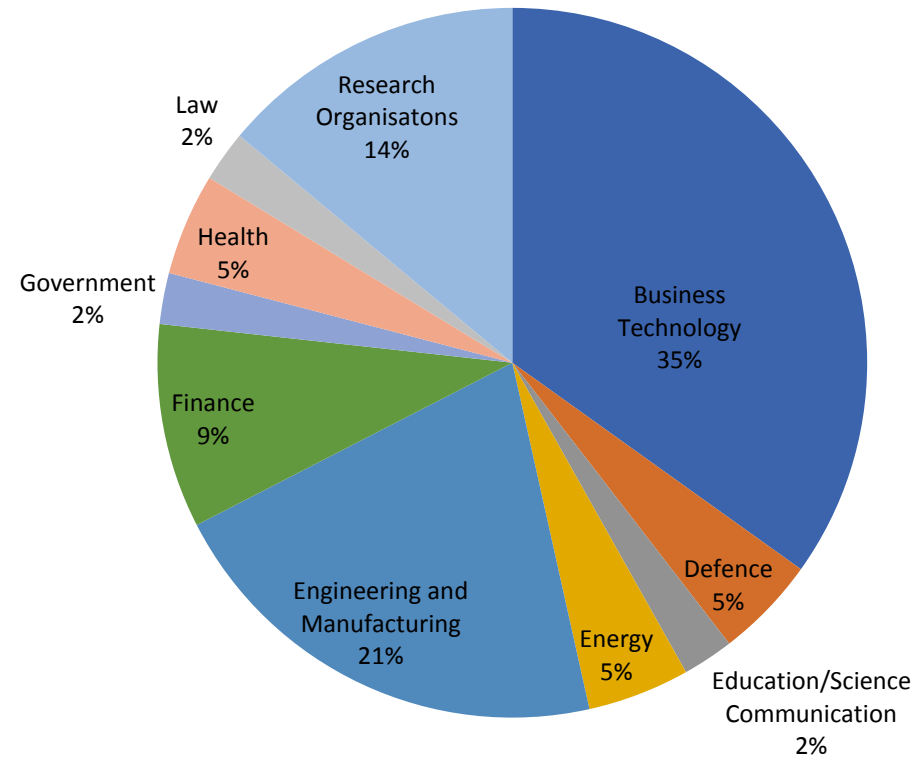
SEPnet PGR Destination Data 2016-7

**Total number of SEPnet PhD graduates
2016-2017 (sample: 95)**



- 46% in industry (2014-5 = 57%)
- Increase in PhDs entering business technology (from 22% to 35%)
- More into data science
- Decrease in education/scicomm (from 16% to 2%)

**SEPnet PhD graduates in non-academic
careers: breakdown by sector (sample: 43)**



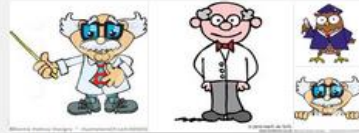
PhD	Job Role	Organisation
Astrophysics	Data Scientist	Argos
Quantum Light and Matter	Laser Systems Engineer	Coherent
Condensed Matter	Production Test Engineer	Gatan
Nuclear Physics	Technical Assistant	Mathys & Squire LLP
Solid State	GIS and LIDAR Analyst	Network Mapping
Particle Physics	Junior IT Consultant	Sopra Banking Software
Experimental Nuclear Physics	Insertion Device Physicist	Diamond Light source
Theoretical Physics	Data Scientist	HSBC
Nuclear Engineering	Nuclear Strategy Lead	NPL
Solid State	Curator, Petrology	Natural History Museum
Quantum Light and Matter	Optoelectronic Development Engineer	Oxsensis
Radiation and Medical Physics	Senior Radiosurgery Physicist	Medical Physics Ltd
Astronomy	Physicist	Cambridge Consultants
Quantum Light and Matter	Consultant	The Technology Partnership
Particle Physics	Data Analytics	British Gas
Quantum Light and Matter	Senior Scientist	DSTL

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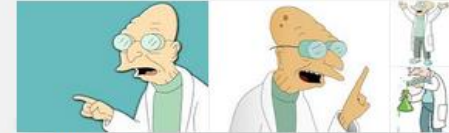
Professor Green



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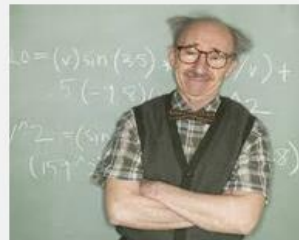
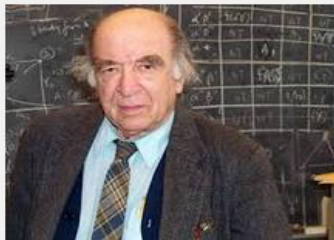
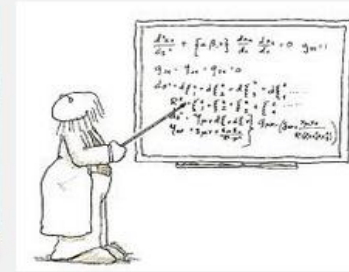
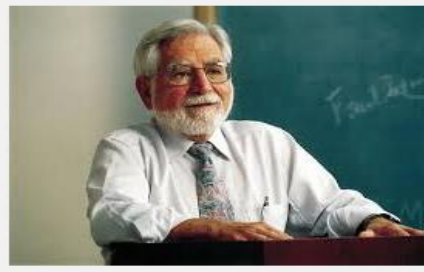
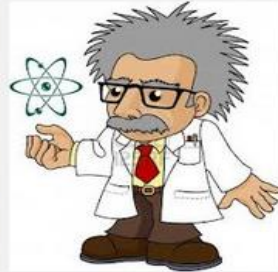
Professor Layton



Futurama



Professor Frink



Microdiscriminations in hiring

Moss-Racusin, CA, Dovidio, JF, Brescoll, VL, Graham, M & Handelsman, J (2012)

‘Science faculty’s subtle gender biases favor male applicants’. Proceedings of the National Academy of Sciences for the United States of America 109(41): 16474–16479

Uhlmann, EL and Cohen, GL (2005)

‘Constructed criteria redefining merit to justify discrimination’.

American Psychological Society 16(6): 474–480.

Where might microdiscriminations have an impact?

- = Bias in shortlisting CVs based on name/school/background (eg Steinpreis et al 1999)
- = Bias in shortlisting applicants based on foreign qualifications (Carlsson and Rooth 2000)
- = Bias in friendliness of body language (eg McConnell and Leibold 2001)
- = Bias in type of drugs prescribed by doctors to different patients (Green et al 2007)

Risks in recruitment

- = how suitable we think an applicant is for a particular course – do they look/sound right

- = Recruitment/selection tests – leads to risk of disadvantaging minority groups
 - minority group should be 30% min (tutorials)

- = Stereotype threat – individuals underperforming if told people like them do badly in certain tasks

Risks in teaching/assessment

- = Bias in assessment of students' aptitude for science (Spear, M. (1987).
- = The biasing influence of pupil sex in a science marking exercise. In A. Kelly (Ed.), *Science for Girls?* (pp. 46-51). Milton Keynes: Open University Press)

Risk in student satisfaction surveys

Female lecturers performing the same lecture are graded more harshly:

Amy Bug; Physics World Volume 23, No. 8, August 2010, p16, 'Swimming against the unseen tide'.

N.B. no evidence of correlation between student satisfaction survey data and quality of teaching or learning

Which characteristics might elicit an unconscious response?

Which characteristics might elicit an unconscious response?

- = Gender
- = Ethnicity
- = Religion/belief
- = Perceived sexual orientation
- = Attractiveness
- = Age
- = Disability
- = School
- = Accent
- = Clothing
- = Haircut
- = Piercings/tattoos
- = Body language
- = Personality
- = Friends/family

Appearance



Geoffrey Miller

@matingmind



Dear obese PhD applicants: if you didn't have the willpower to stop eating carbs, you won't have the willpower to do a dissertation #truth

2:23pm - 2 Jun 13

Under-attainment in BME students

“Despite controlling for other factors which impact on attainment, we find that ***ethnicity is still statistically significant in explaining attainment in HE***: all students from minority ethnic communities ... are found to be less likely to achieve a better degree relative to White UK & Irish students – and this result holds at all levels of attainment.”

(Broecke and Nicholls, DfES 2007)

Table 1: Attainment across JACS1 subject areas split by ethnicity

JACS1 Subject Areas	Proportion of graduates in each subject		Good Degree Attainment			First Degree Attainment		
	Non-White	White	Non-White	White	Diff. White Non-white	Non-White	White	Diff. White Non-whit
Subjects allied to medicine	35.9%	64.1%	67.5%	75.7%	8.2%	15.1%	26.1%	11.0%
Computer science	25.8%	74.2%	56.4%	71.4%	15.0%	35.9%	38.4%	2.5%
Engineering & technology	23.0%	77.0%	66.1%	79.4%	13.3%	21.1%	30.4%	9.3%
Law	22.9%	77.1%	79.8%	88.3%	8.5%	8.7%	16.8%	8.2%
Social studies	22.0%	78.0%	71.4%	81.8%	10.3%	15.1%	15.2%	0.1%
Mathematical sciences	20.5%	79.5%	62.2%	66.3%	4.1%	23.5%	31.6%	8.1%
Business & administrative studies	19.7%	80.3%	81.9%	82.4%	0.5%	13.1%	9.7%	-3.5%
Combined JACS1 subjects	19.3%	80.7%	69.8%	83.0%	13.2%	9.0%	14.8%	5.8%
Biological sciences	15.9%	84.1%	68.8%	84.9%	16.1%	10.2%	22.2%	12.0%
Architecture, building & planning	15.6%	84.4%	72.0%	77.8%	5.8%	N/A	14.8%	N/A
Physical sciences	12.1%	87.9%	58.5%	66.7%	8.1%	14.6%	29.8%	15.2%
Languages	10.3%	89.7%	70.0%	79.8%	9.8%	8.5%	10.9%	2.5%
Geographical Studies	7.3%	92.7%	62.2%	74.1%	11.9%	16.2%	13.7%	-2.5%
Historical & philosophical studies	7.3%	92.7%	73.2%	84.6%	11.4%	12.7%	14.2%	1.5%
Education	7.1%	92.9%	N/A	61.5%	N/A	N/A	0.0%	N/A
Creative arts & design	5.3%	94.7%	92.9%	94.0%	1.2%	21.4%	27.8%	6.3%
Grand Total	17.7%	82.3%	69.7%	80.2%	10.6%	13.9%	18.6%	4.7%
N/A – Less than 10 students within cohort								

Aneez Esmail.
Manchester
University

BME under attainment in Physical Sciences

- In the Physical Sciences 12% of students were UK BME and there was an 8% attainment gap.
- Physical Sciences had the largest gap when it came to attaining Firsts (15%)

(The three subject areas with the highest proportions of BME students had good degree attainment levels below the average (78.4%) and within these subjects white UK students outperformed BME UK students.)

Microdiscriminations:

- Psychological explanation

Unconscious bias refers to a bias that we are unaware of, and which happens outside of our control. It is a bias that happens automatically and is triggered by our brain making quick judgments and assessments of people and situations, influenced by our **background, cultural environment** and **personal experiences**

(ECU: 2013 *Unconscious bias in higher education*)

Microdiscriminations: - explanation from evolution

The 100 μ s judgement:

- Friend or foe
- Level of attractiveness
- Dominant or not

A matter of survival.....

200,000 unconscious thoughts – 1 conscious

Explanation for 21st Century

Fast thinking people – favour gut reaction

System 1 brain

Slow thinking people – favour logical analysis

System 2 brain

implication for giving presentations eg Public Engagement

– we're not all slow thinkers

So what do you want to do?

= How do you find the job you were born to do?

Break

Barriers to you getting your dream job

- The world's barriers
- Your barriers

The experiment:

- Cheerful Committed Communal Connected
Considerate Cooperative Dependable Empathic
Honest Interpersonal Interdependent
Interpersonal Kind Loyal Modest Nurturing
People-focused Pleasant Polite Quiet
Responsible Sensitive Supporting Sympathetic
Trustworthy Understanding Warm

The experiment:

- Active Adventurous Ambitious Analytical
Assertive Connected Autonomous Challenging
Competent Confident Courageous Decisive
Determined Dominant Forceful Implusive
Independent Individual Intellectual Leader
Logical Merit Objective Opinionated
Outspoken Persistent Principled Superior Self-
confident Self-sufficient Self-reliant

The evidence:

Masculine language

- Active Adventurous Ambitious Analytical
Assertive Connected Autonomous Challenging
Competent Confident Courageous Decisive
Determined Dominant Forceful Implusive
Independent Individual Intellectual Leader
Logical Merit Objective Opinionated
Outspoken Persistent Principled Superior Self-
confident Self-sufficient Self-reliant

The evidence:

Feminine language

- Cheerful Committed Communal
Compassionate Connected Considerate
Cooperative Dependable Empathic Honest
Interpersonal Interdependent Interpersonal
Kind Loyal Modest Nurturing People-focused
Pleasant Polite Quiet Responsible Sensitive
Supporting Sympathetic Together Trustworthy
Understanding Warm

The research:

“Evidence That Gendered Wording in Job Advertisements Exists and Sustains Gender Inequality”.

Danielle Gaucher and Justin Friesen.

University of Waterloo, Canada.

Aaron C. Kay. Duke University, Canada.

Journal of Personality and Social Psychology, 2011,

Vol. 101, No. 1, 109–128.

American Psychological Association

Outcomes:

- Masculine wording in job advertisements leads women to identify
 - lower sense of ‘belongingness’
 - jobs as less appealing
 - less interest in applying for the job.
- Gendered wording did not affect people’s appraisals of their personal **ability** to carry out a job.

Interestingly

In post-experiment debriefings **no participant** suggested that:

- his/her responses were influenced by the wording of the advertisements
- advertisements included words that conformed to gender stereotypes

Graduates reaction to job adverts

- Arrogance vs humility
- Overview vs job detail
- Wishful thinking vs realistic expectations
- Individualism vs supportive environment
- Salary negotiable vs stated salary range

“Analysis of job adverts and barriers to application”.

Sandyha Patel and Tanya Lynden, University of Reading.

<http://www.hestem.ac.uk/activity/analysis-job-adverts-and-students-reading-job-adverts-identify-barriers-students-applying-j>

A good selection process.....

The Royal Academy of Engineering:

“Diverse teams produce better results where different experiences and ways of thinking often lead to innovative outcomes.”

<http://www.raeng.org.uk/policy/diversity-in-engineering/resources#General>

A poor selection process

The danger words

- Competent (feisty)
- Merit
- Potential
- Gravitas

Risky References

<http://www.nature.com/news/women-postdocs-less-likely-then-men-to-get-a-glowing-reference-1.20715>

Dutt, K. *et al. Nature Geosci (2016)*

.....regardless of gender of referee

Risky References

“highly intelligent”

“very productive”

“outstanding”

“scientific leader”

“hard working”

“brilliant scientist”

“trailblazer”

Risky References

Beware referees who:

- use gendered words – as above!
 - emphasise male 'potential'
 - emphasise female 'diligence'
-
- N.B. teamplayer means different things!

The rules of the promotion game

- It's not just about working hard

The rules of the promotion game

In universities – and in business....

It's not just about working hard

- hard work
- visibility
- image

The rules of the promotion game

It's not just about working hard

- hard work - 12%
- visibility - 65%
- image - 23%

The rules of the promotion game

It's not just about working hard

- The value of being on committees/boards
 - build your visibility
- The value of networking
- Volunteer – show willing
- Provide solutions not problems

Overcoming your barriers:

Creating your portfolio

- Fill the gaps

Use positive words to sell yourself

- Practise applying for jobs
- NB the careers Snakes & Ladders

BUT don't forget there are things outside of your control....

CV's

- Use positive adjectives:

Ambitious Analytical Assertive Connected Autonomous Competent
Confident Courageous Decisive Determined Independent Individual
Intellectual Leader Logical Merit Objective Persistent Principled Self-
sufficient Self-reliant

- Use significant words:

Initiated Designed Managed Drove Led Inspired Completed Success(ful)
Impact(ful) Strategic

Make Yourself Visible

- Be seen – join / attend things
- Relationships – nothing works without them
- Dress for the job you want not the job you have

Never Say No

- Don't assume things will remain as they are
- Keep your eyes open
- Create your own opportunities.
- Moving on to something different isn't a failure!

Over to you.....