

The aim of this presentation is to promote an understanding of unconscious bias and how it can affect the peer review process/selection processes. It also suggests strategies to mitigate the influence of unconscious bias in the peer review process.

Unconscious biases effect our choices and lead to inequalities in society. Unconscious biases effect our behaviour and decisions, although we like to believe that these are based on reflected thinking and deliberate choice, rather then having been influenced by secretly held prejudices and gut reactions.

For the purpose of this talk we I will initially talk about bias in general and where and how it influences our decisions.

Peer rev	iew	
Principles		
$\bigcirc$	Fairness	
$\left(\begin{array}{c} \Theta \\ \Theta \end{array}\right)$	Impartiality	
	Confidentiality	
Objectivity	Transparency	
Threats to ob Conscious bias - But, unconscious	<b>jectivity</b> addressed by conflict-of-interest policies. <b>5 bias</b> can still sneak in.	
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Peer review is the main mechanism for quality control in research.

**Objectivity** is one of the main principles of peer review, together with fairness, impartiality, confidentiality, transparency.

To ensure that objectivity is safeguarded, Col policies are put in place. Committee members are asked to declare any actual, potential or perceived conflict they are aware of that could compromise the objectivity of their judgment. This is to remove POTENTIAL CONSCIOUS BIASES.

But **unconscious bias** can still sneak in, and number of studies show that this happens.



Unconscious biases influence the judgments and decisions we make if we are not aware of them.

Unconscious biases are **short cuts** our brain uses to filter and sort quickly all information it receives constantly from the environment.

They are influenced by our background, cultural and social environment, personal experiences, work experiences and the media.

They make us automatically categorize individuals by, e.g., age, gender, ethnicity, disability or role.

Once we map an individual into a category, specific meanings associated with that category are immediately and unintentionally activated and can influence our interaction with that individual.

These associations are not always correct and can derail our **objective** judgement. It is important to recognize when this happens, to mitigate its possible negative effects on our objectivity.



Chose some examples relevant for the type of selection.

When interviewing you may want to chose:

Gender: it has been shown that both men and women tend to consider women as less competent than men in a professional setting.

Language: you may not like a particular accent, or you may have impatience with people who do not speak English so well.

Previous success: you may be impressed by other grants and awards a candidate has already received.

Appearance: the person may appear (e.g. body language, style of dress, weight etc.) in a way that doesn't align with your life style.

Personality bias: a candidate appears to be very similar to you in style or personality. We tend to favour people who are like us.

Culture: the candidate has a certain way of behaving or temperament that is difficult for you to relate to.

Examples of bias in reviewing written applications:

Scientific area: You personally might not be so interested in particular scientific areas and show in fact a strong preferences for your area.

Institution: You may be influenced by the fact that the candidate is from an institution that you are not aware of... or an institution that you particularly like for whatever reason.



- Ego depletion: Decisions on individuals may be influenced by the time of the day they are discussed, and the order of the candidates on the list. It has been shown that decisions tend to be more negative towards the end of a session, possibly due to low energy reserves of the committee members (long time from the last meal, low sugar levels)
- Dedicate time for evaluation before, but also during the committee meeting.
- Focus on the selection criteria: Read carefully the instructions for reviewers and ask the office if you have questions. Be clear about the criteria relevant for the programme so that you evaluate based on those.
- Stick to the facts from the application material. Do not let anecdotal information, possibly brought in by another committee member, influence the decisions. Similar information will not be available on all candidates and could therefore skew the process.
- Slow down decisions. Do not rush the decision making.

- Reconsider reasons for decisions, i.e. note down the reasons for the decision and make sure the everybody agrees.
- When preparing for interviewing candidates, formulate your questions in advance taking into consideration the aim of the evaluation.



6

# Evidence of unconscious biases in the evaluation of scientists



### Previous funding success (Matthew effect)

An analysis of a scheme of the Netherlands Organisation for Scientific Research (NOW) found that winners just above the funding threshold accumulate more than twice as much funding during the subsequent eight years as non-winners with near-identical review scores that fall just below the threshold. (Bol et al., 2018, PNAS)

## Ageism

First-person accounts by highly qualified candidates that have been bypassed in the academic job market solely due to age show age bias or discrimination in academic settings. (Kahana et al., 2018, Gerontologist; Fant, 2012, The Chronical of Higher Education; McKee, 2014, Inside Higher Ed. )

#### Gender bias

Applicants for a lab manager position were judged as more competent and hireable and would receive more mentoring support when presented with male names than with female names to faculty at research intense US universities (both to female and male faculty members). And male applicants would be offered \$4000 more per year then female applicants. (Moss-Racusin et al, 2012, PNAS)

EMBO

DO NOT SHOW, for information only

## Evidence of unconscious biases in the evaluation of scientists **Ethnicity bias** A recent study showed that Black applicants are less likely to receive NIH grants that their White colleagues. (Hoppe et al., 2019, Science Advances) Another study found that Asian and Black applicants are less likely to receive NIH funding that White applicants, and that Black PIs are required, on average, to submit a grant application more times before it is funded. (Ginther et al., 2011, Science) **Institution bias** A study of Canada's Natural Sciences and Engineering Research Council Discovery Grant program found that funding success and quantity were consistently lower for applicants from small institutions, and this persisted across all levels of applicant experience as well as three different scoring criteria. (Murray et al., 2016, PlosOne) **Scientific area** A study of NIH grants shows that evaluators are both better informed and more biased about the quality of projects in their own area. (Li, 2017, American Economic Journal: Applied Economics) EMBO

Here is some evidence of some biases in the evaluation of researchers.

**Scientific area:** Be careful: you are an expert in your area, but you should not be an advocate for your scientific area at the cost of quality.

A study of NIH grants shows that evaluators are both **better informed and more biased** about the quality of projects in their own area. On net, the benefits of expertise weakly dominate the costs of bias. As such, policies designed to limit bias by seeking impartial evaluators may reduce the quality of funding decisions. (Li, 2017, American Economic Journal: Applied Economics)

Li, 2015, *Expertise vs. bias in Evaluation: Evidence from the NIH*, Harvard Working paper https://www.hbs.edu/ris/Publication%20Files/16-053\_d27212a1-d6ca-400dbb65-b078f104d8ae.pdf https://www.aeaweb.org/articles?id=10.1257/app.20150421

Age bias:

Kahana *et al.*, 2018, Beyond Ageist Attitudes: Researchers Call for NIH Action to Limit Funding for Older Academics https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5946956/#!po=90.0000

Fant, 2012, On Discrimination and Deliberation, The Chronical of Higher Education

https://www.chronicle.com/blogs/onhiring/on-discrimination-and-deliberation

McKee, 2014, The Age(ism) of diversity, Inside Higher ed https://www.insidehighered.com/advice/2014/08/13/essay-age-discriminationfaculty-hiring

This one is on hirings in the US, not research

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•	They are influenced by our background, cultural and social environment, personal experiences, work experiences and the media.	
•	They make us automatically categorize individuals by, e.g., age, gender, ethnicity, disability or role.	
•	Once we map an individual into a category, specific meanings associated with that category are immediately and unintentionally activated and can influence our interaction with that individual. (and lead us to make inferences on her/his <i>competence</i> )	
•	These associations are not always correct and can derail our <b>objective</b> judgement, e.g., on a person's <i>competence</i> . It is important to recognize when this happens to mitigate its possible negative effects on our objectivity.	

Psychologists have studied biased extensively and define it as:

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These associations are not always correct and can derail our **objective** judgement, e.g., on a person's *competence*. It is important to recognize when this happens to mitigate its possible negative effects on our objectivity.

Greenwald and Banaji, 1995, Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review* 

Eberhart, 2019, Biased: Uncovering the Hidden Prejudice That Shapes What we See, Think and Do, *New York, Viking*