Unconscious Bias in Evaluation and Hiring Processes

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Agenda - Unconscious Bias in Evaluation and Hiring Processes

- What Is „Diversity“ and Why Do We Need It In Science?
- Unconscious Bias – Neuroscientific Background
- How Unconscious Bias Affects Evaluations
  - Hiring Procedures
  - Funding Procedures
- What Now? How to Deal With Biases

Equal Opportunities vs. Diversity in Science

Press Release No. 27 | 5 July 2022

DFG Launches New Initiative for Equal Opportunities and Diversity

Expanded research-oriented equal opportunities standards to include diversity / DFG funding activity to follow new integrated equal opportunities and diversity concept

The DFG aims to further promote equal opportunities and diversity in science at a number of levels. This has now been decided by the committees of Germany's biggest research funding organisation and the country's central self-governing body for research. As a result, the aspect of diversity is now to be incorporated in the so-called Research-Oriented Standards on Equal Opportunities", whose title will be expanded to reflect this: in future they will be known as the "Research-Oriented Equity and Diversity Standards". In addition to promoting the issue of equal opportunities, the DFG will also be doing more to embrace diversity in its own funding activities. The two issues have prominent significance for the work of the DFG as statutory goals.

Extension of the Research-Oriented Equal Opportunities and Diversity Standards

DFG members undertook a voluntary commitment to anchor additional dimensions of diversity in the Research-Oriented Equal Opportunities Standards that have been in place since 2008. In addition to gender and gender identity, these now include aspects such as ethnic origin, religion, other personal beliefs and disability or chronic/long-term illness, as well as social origin and sexual orientation. Where one person combines several such dimensions of difference (intersectionality), this should also be adequately taken into account. In addition, DFG members acknowledged their responsibility towards employees at their institutions and other persons with regard to protection from sexual harassment, discrimination and bullying.

DFG Deutsche Forschungsgemeinschaft

Equality vs. Equity and towwards justice

Inequality

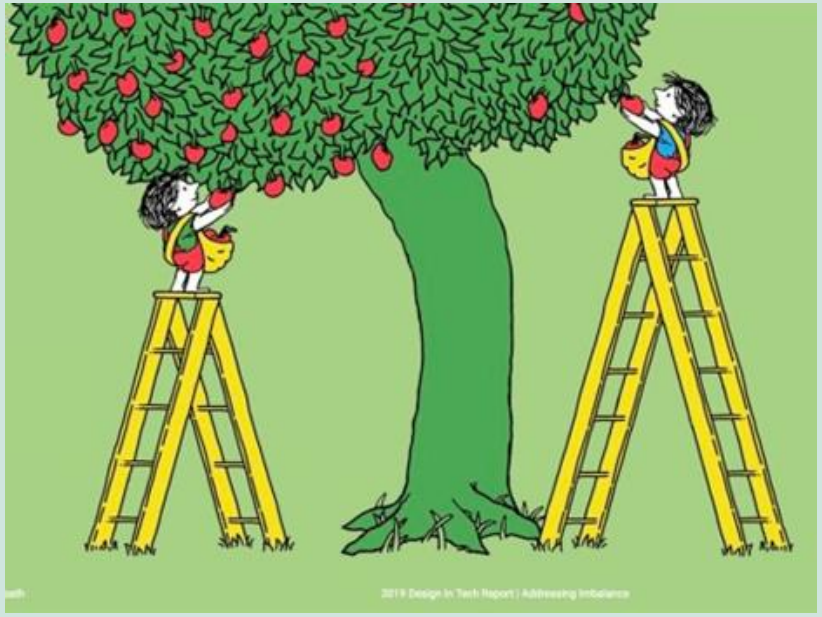
Unequal access to opportunities

Equality?

Evenly distributed tools and assistance

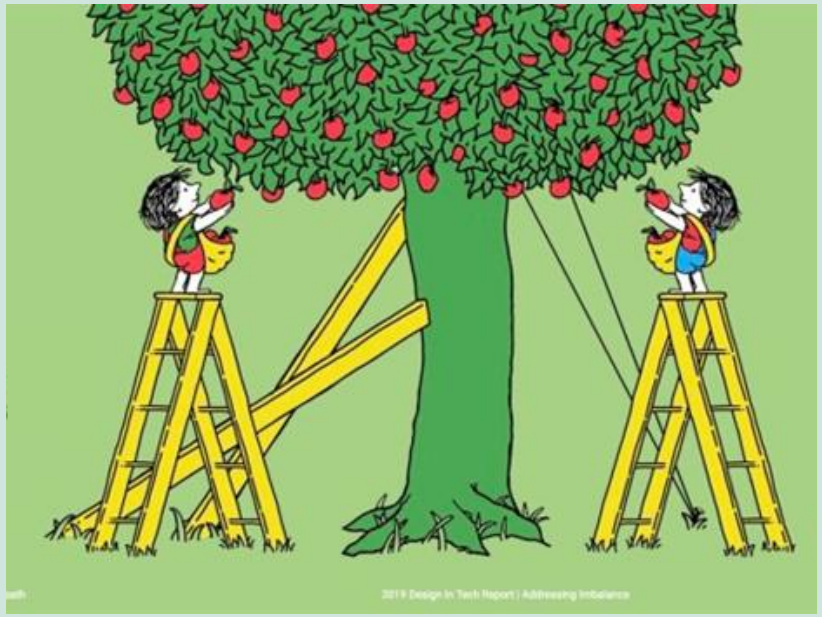
Equity

Custom tools that identify and address inequality



Justice

Fixing the system to offer equal access to both tools and opportunities



New DFG Standards

Research-Oriented **Standards on Equal Opportunities**

- gender
- gender identity

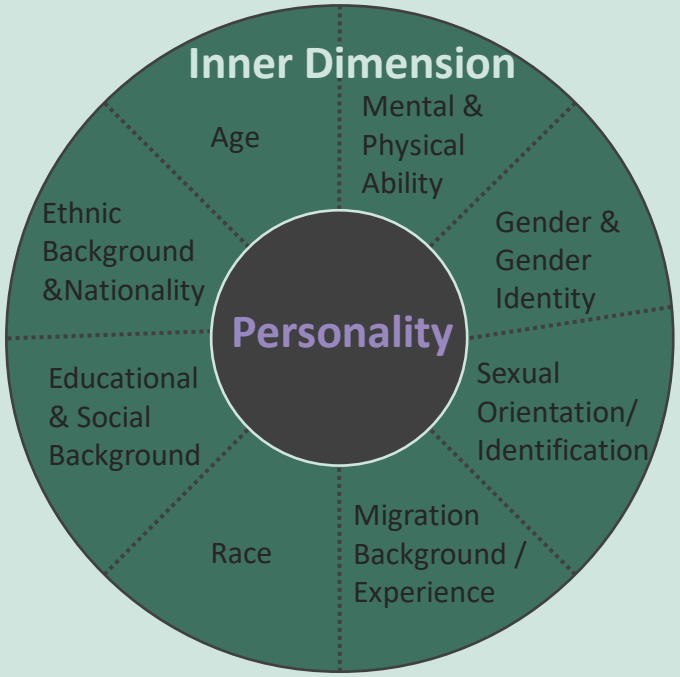
Research-Oriented **Equity and Diversity Standards**

- gender
- gender identity
- ethnic origin
- religion
- other personal beliefs
- disability or chronic/long-term illness
- social origin
- sexual orientation

DFG Deutsche Forschungsgemeinschaft

Dimensions of Diversity

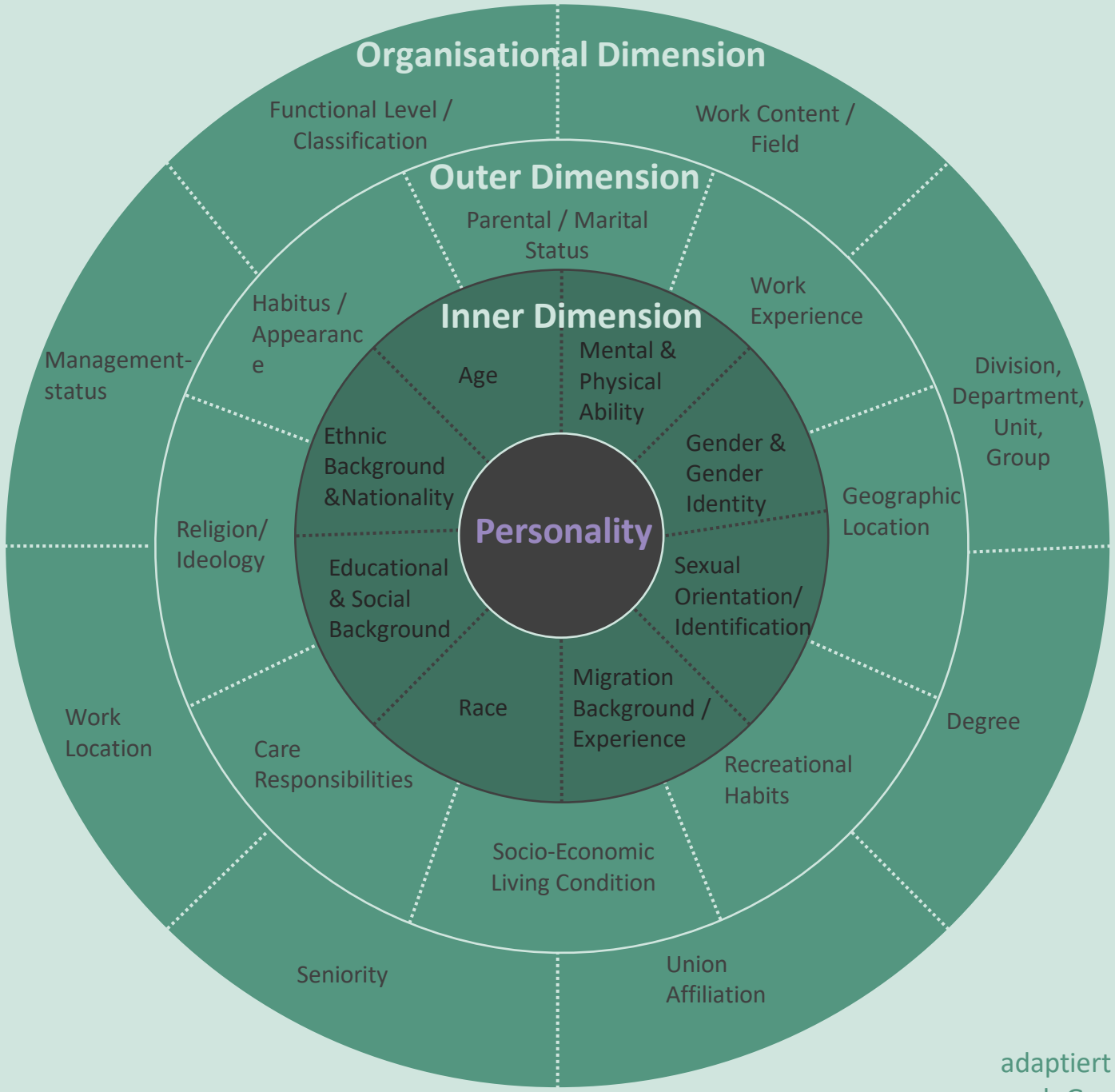
- The Wheel of Diversity -



adaptiert von:"4 Layers of Diversity"
nach Gardenswartz und Rowe (2003)

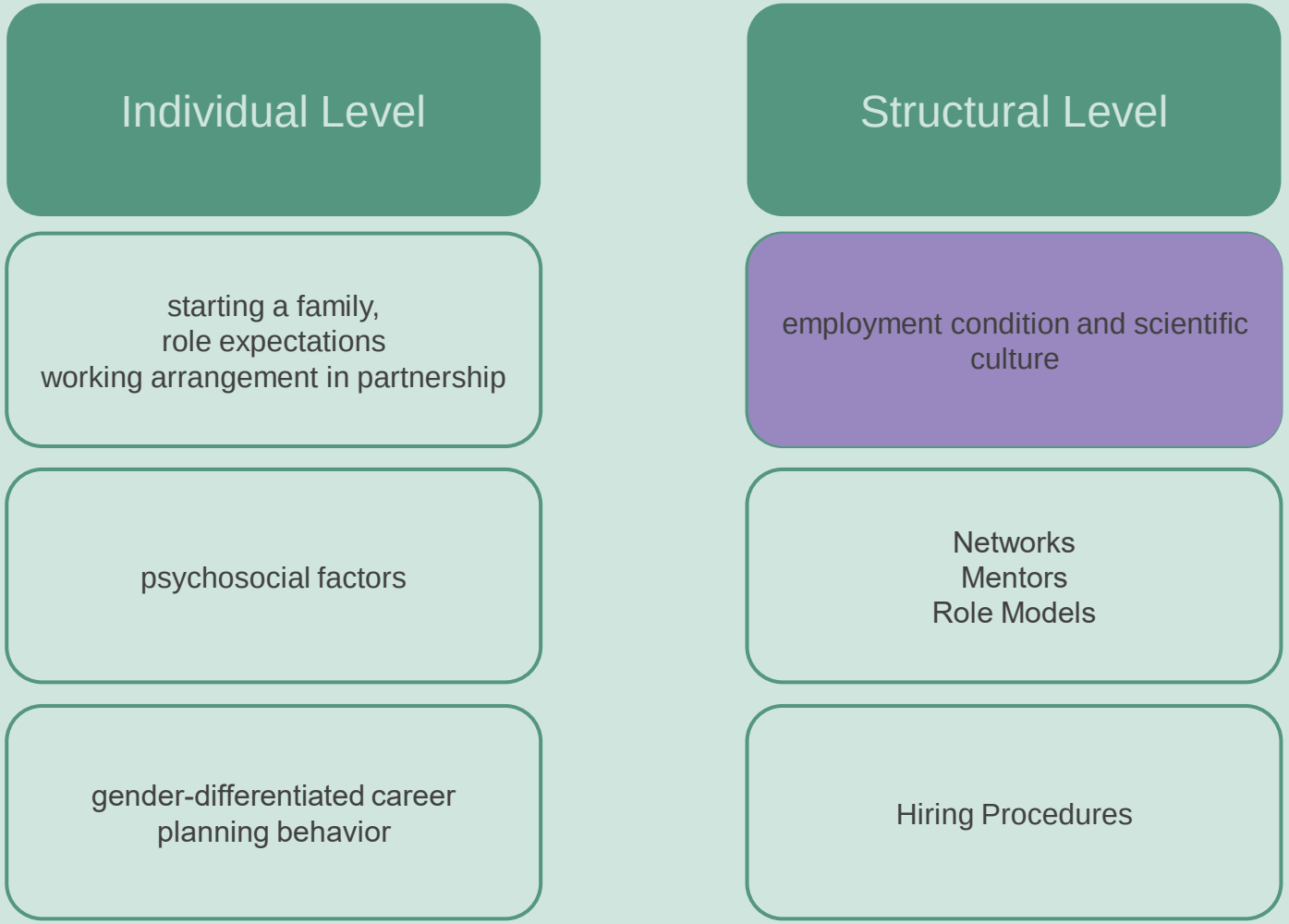
Dimensions of Diversity

- The Wheel of Diversity -



adaptiert von:"4 Layers of Diversity"
nach Gardenswartz und Rowe (2003)

Explanation for Unequal Gender Ratios



Klammer, Ute; Altenstädter, Lara; Petrova-Stoyanov, Ralitsa; Wegrzyn, Eva:
Gleichstellungspolitik an Hochschulen. Was wissen und wie handeln Professorinnen und Professoren?
Opladen; Berlin; Toronto : Verlag Barbara Budrich 2020, 410 S.
DOI: 10.25656/01:20640

What is a discriminatory experience in regards to equal opportunities?

Exclusion from Decision-Making: A person of color frequently finds themselves excluded from important project decisions and leadership roles, despite having the expertise to contribute effectively.

Microaggressions and Stereotyping: A transgender scientist regularly experiences microaggressions and misgendering in their workplace, making them feel uncomfortable and unwelcome.

Unequal Funding Allocation: A female researcher consistently faces challenges in securing research funding, while her male counterparts with similar research proposals receive funding more easily.

Underrepresentation in Conferences and Panels: A person from an underrepresented group notices that conferences and panel discussions predominantly feature speakers who share a similar demographic background, limiting diverse perspectives.

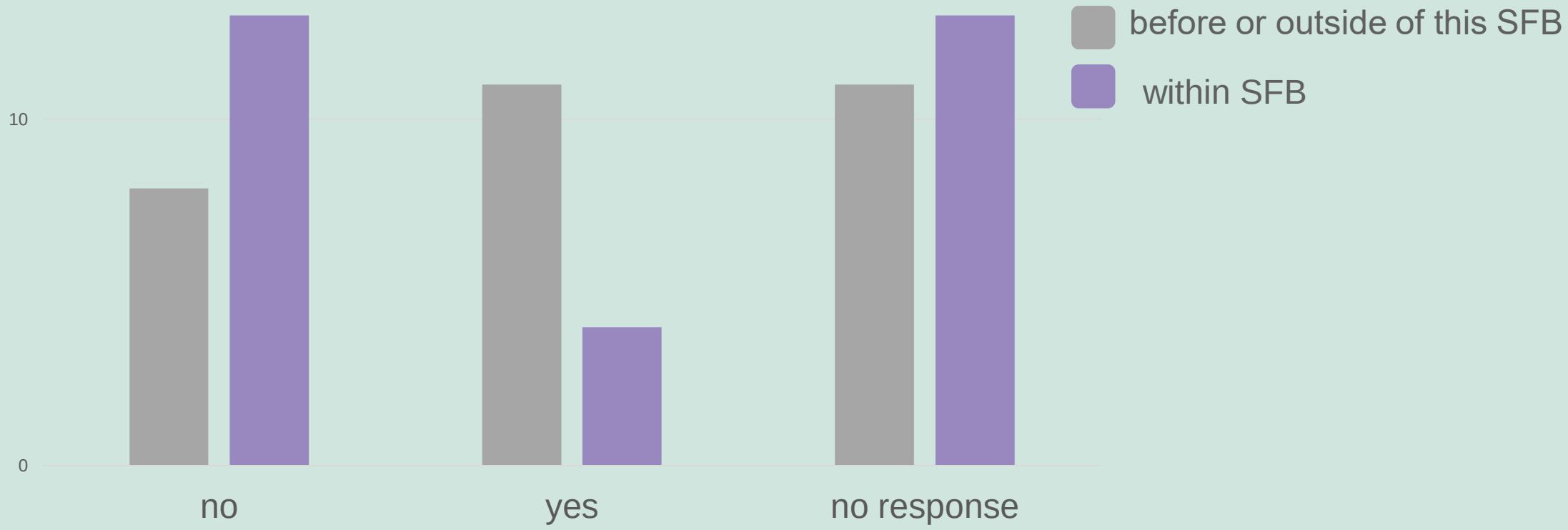
Unconscious Bias in Hiring: An applicant from a marginalized group is not selected for a scientific position, despite meeting all the qualifications, due to unconscious biases in the hiring process.

Work-Life Imbalance: A new parent faces difficulties in balancing care-responsibilities with work.

Limited Mentorship Opportunities: A junior scientist from an underrepresented background struggles to find mentors who can guide them in their career because there are few senior scientists from similar backgrounds in their institution.

Access to Resources: A scientist with a disability faces difficulties accessing laboratory facilities that are not adequately designed to accommodate their specific needs.

Have you experienced discriminatory / equal opportunities–related issues?



A Riddle

Let‘s talk about Bias

Red

Red

Green

Purple

Blue

Purple

Blue

Red

Green

Purple

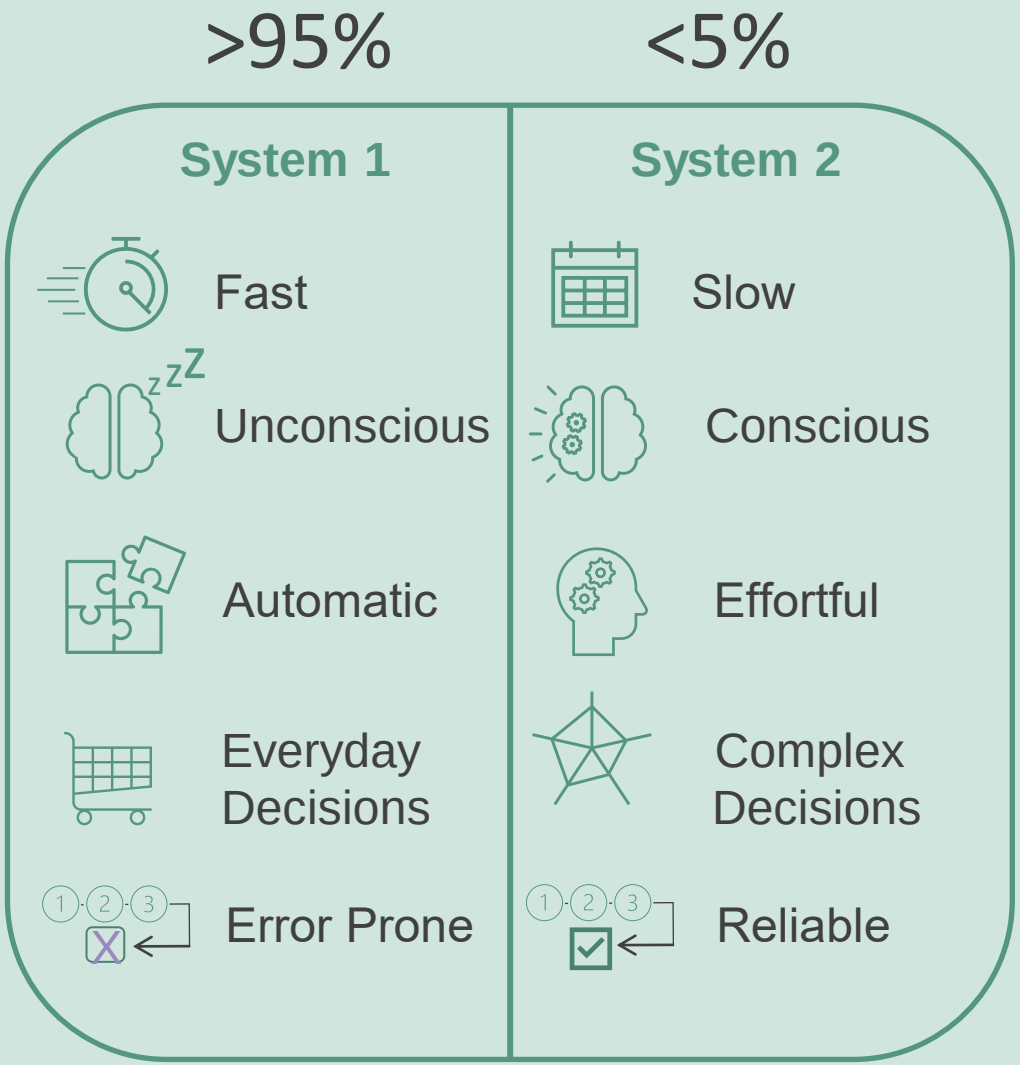
Stroop Test: How Implicit Associations are Measured

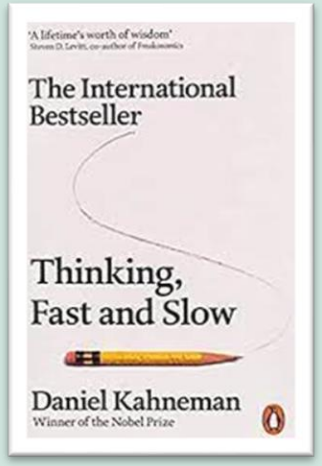
Congruent Stimuli	Incongruent Stimuli
Red	Purple
Green	Blue
Purple	Red
Blue	Green

longer reaction time

Harvard Implicit Association Test (IAT)

Two Systems of Thinking: **The Fast and the Slow**





….in the end, it‘s all about efficiency

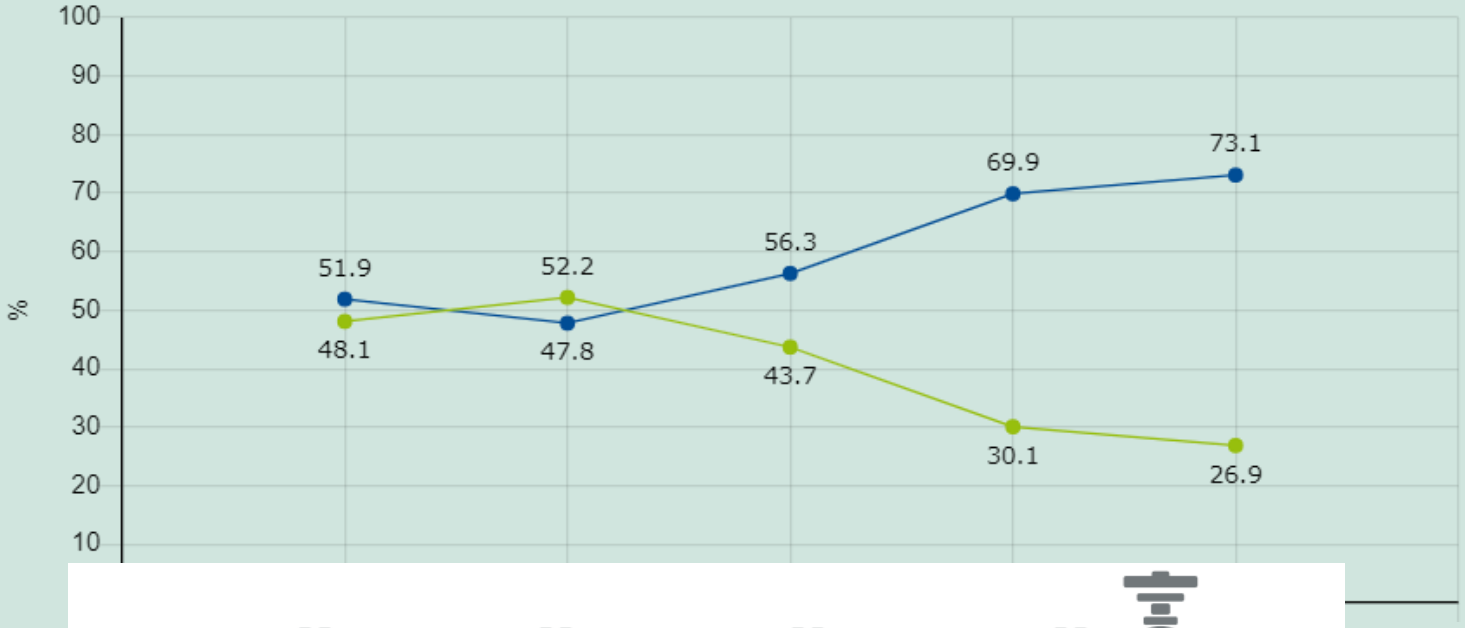
Quelle: Van den Brink (2015: 199; © Isabelle Dinter).

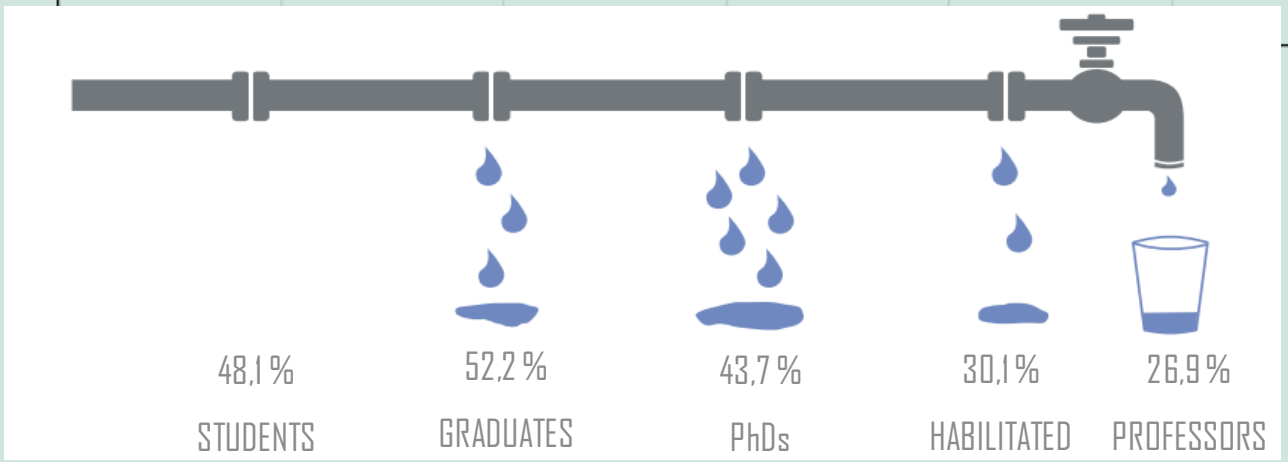
Are we all biased when evaluating male versus female scientists?

….and what about white versus People of Color (PoC) scientists?

Quelle: Van den Brink (2015: 199; © Isabelle Dinter).

The academic career ladder: A leaky pipeline for females





SFB 1491

Source: Statistikportal. Geschlechterbezogene Hochschuldaten NRW
Average of the years 2018-2020

Explanation for Unequal Gender Ratios

Individual Level	Structural Level
starting a family, role expectations working arrangement in partnership	employment condition and scientific culture
psychosocial factors	Networks Mentors Role Models
gender-differentiated career planning behavior	**Evaluation in** Hiring Procedures Funding Procedures

Klammer, Ute; Altenstädter, Lara; Petrova-Stoyanov, Ralitsa; Wegrzyn, Eva:
Gleichstellungspolitik an Hochschulen. Was wissen und wie handeln Professorinnen und Professoren?
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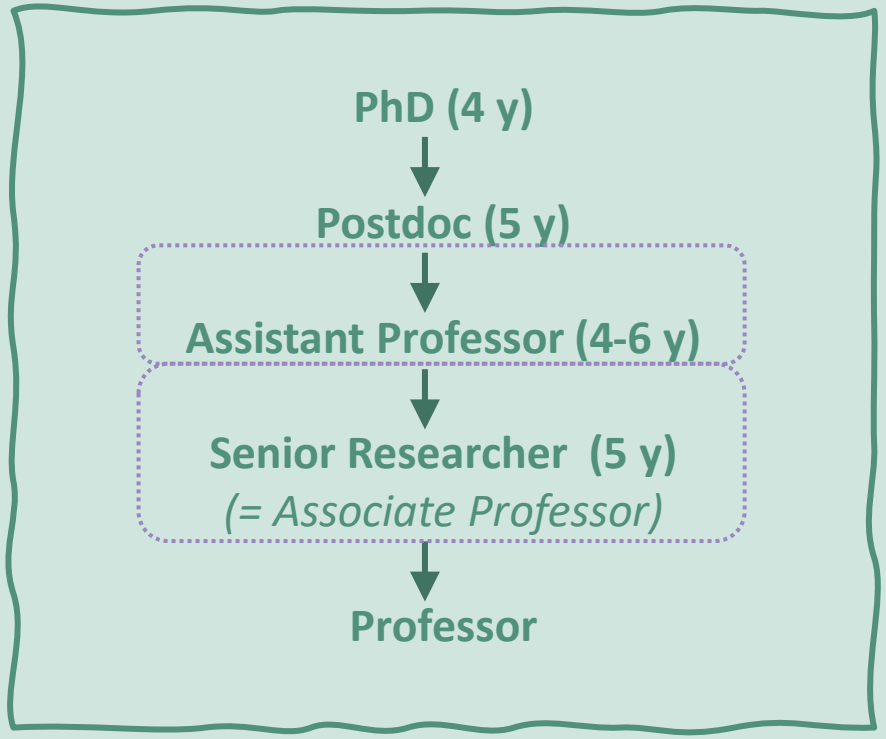
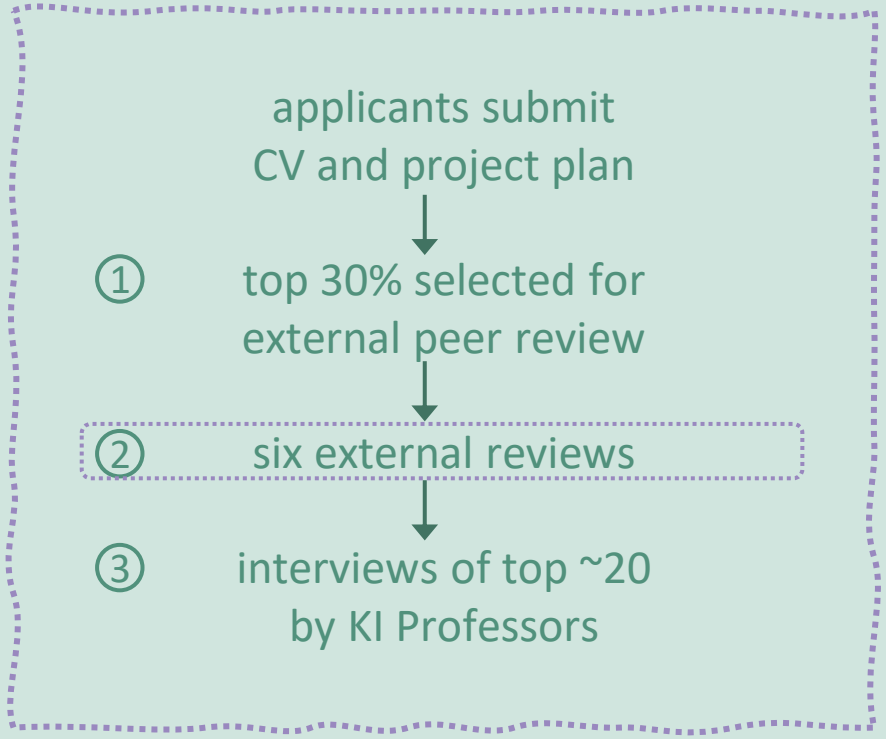
Study: Real-world peer review procedure at Karolinska Institute (KI)

Academic Trajectory at KI



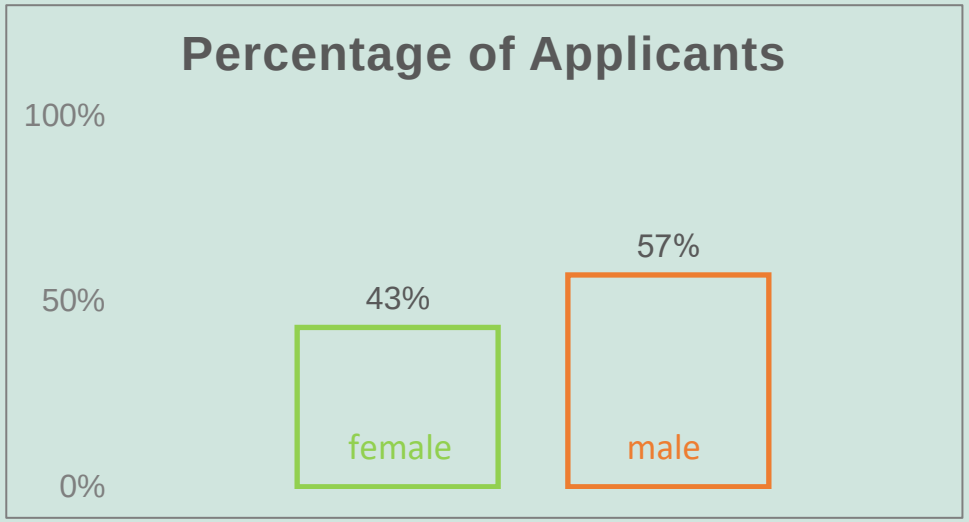
3-Step recruitment process

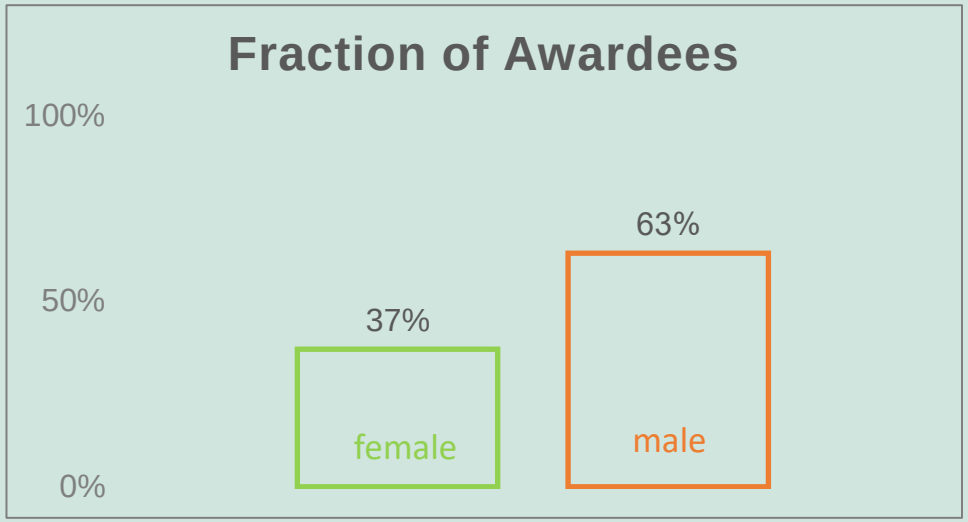


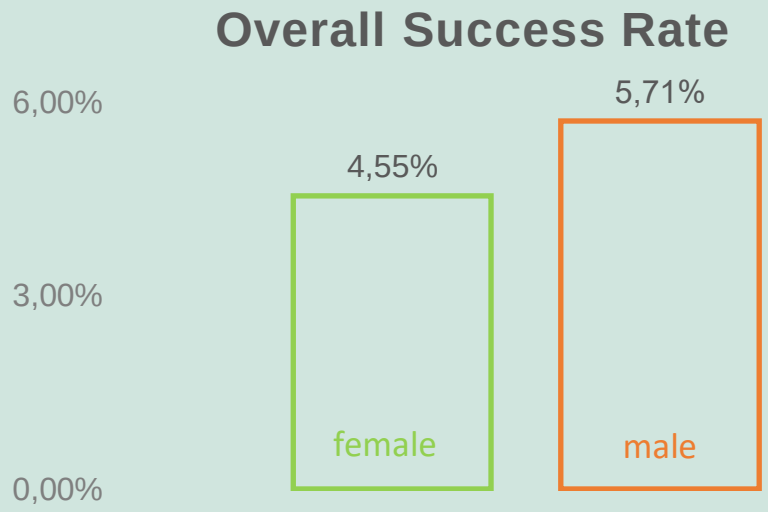
Gender Bias Impacts Top-Merited Candidates.
Andersson et al., Front. Res. Metr. Anal., 2021
https://doi.org/10.3389/frma.2021.594424

Study: Real-world peer review procedure at Karolinska Institute

2014 - 2017







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Study: Real-world peer review procedure at Karolinska Institute

2014 - 2017

Is the gender difference in success rate atrributed to unconscious bias of reviewers?

Gender Bias Impacts Top-Merited Candidates.
Andersson et al., Front. Res. Metr. Anal., 2021
https://doi.org/10.3389/frma.2021.594424

Comparing composite bibliometric score with merit score given by external reviewers

composite bibliometric score

reflects scientific:

- **Output**: Number of publications
- **Impact:** Total number of citations
- **Ability to lead a project** (Junior/Postdoc): Share of publications in which the applicant was the first author
- **Ability to lead a project** (Senior/Group Leader): Share of publications in which the applicant was the last author
- **Consistency of impact across publications:** H index
- **Visibility of research and likely impact within its field:** Share of publications in high impact journals within its field
- **Bonus for high-ranking publication:** Binary indicator for having any publication in a high impact journal overall

vs.

merit score

subjective **external peer reviewer score** of applicants' merits

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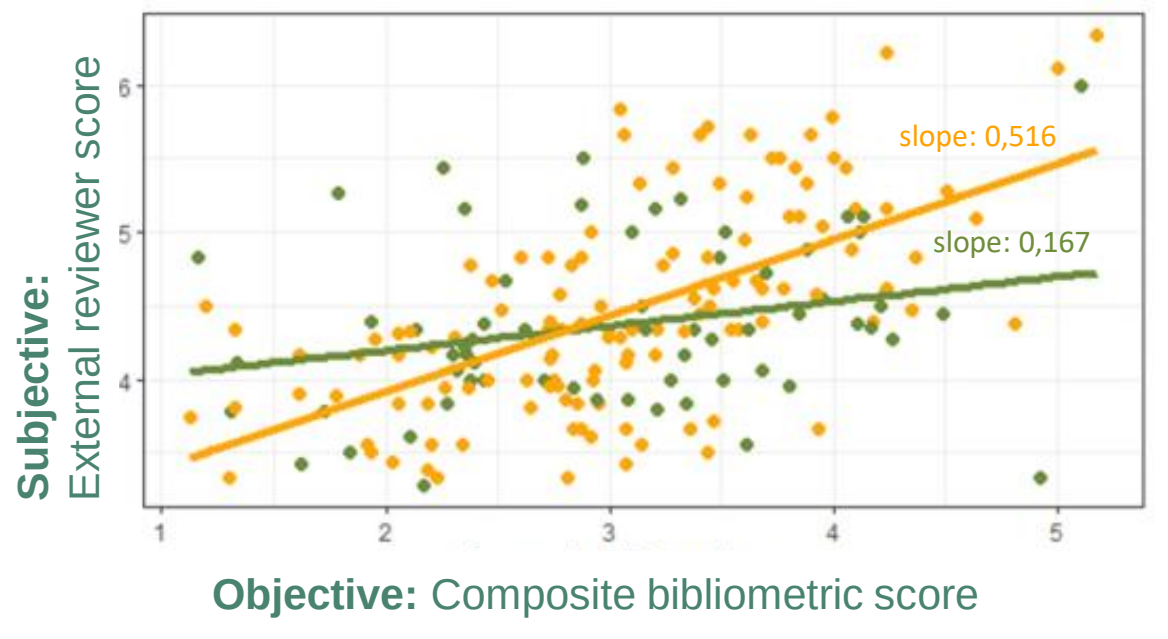
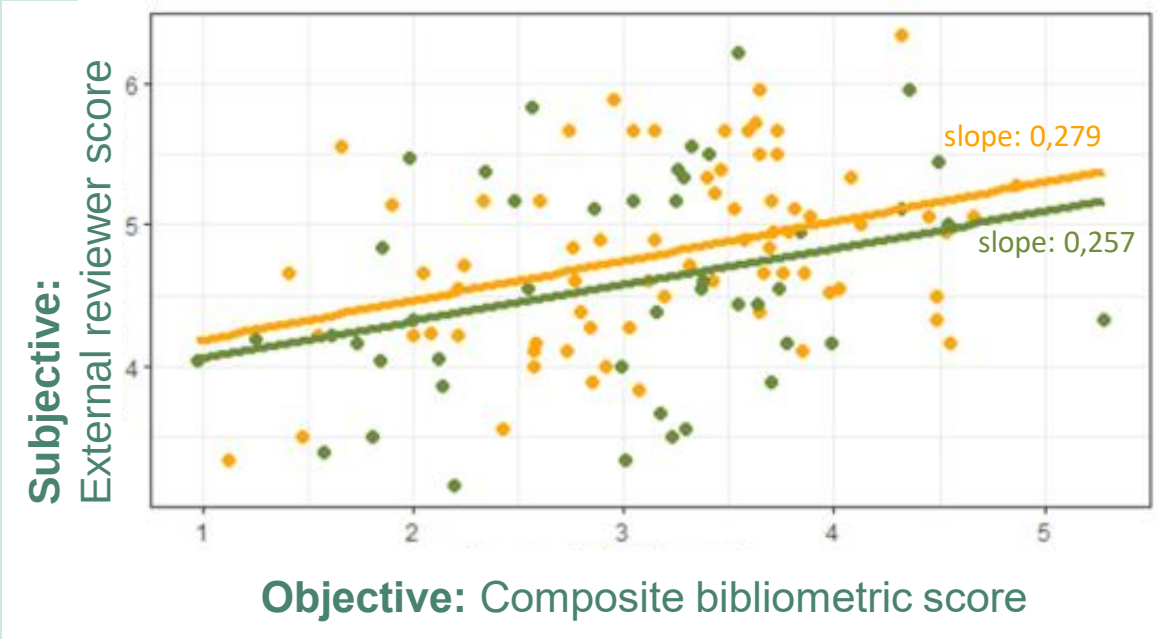
Andersson et al., Front. Res. Metr. Anal., 2021
https://doi.org/10.3389/frma.2021.594424

Women receive lower merit scores for equal composite bibliometric scores

Assistant Professor (2014-2017)



Senior Researcher (2014-2017)

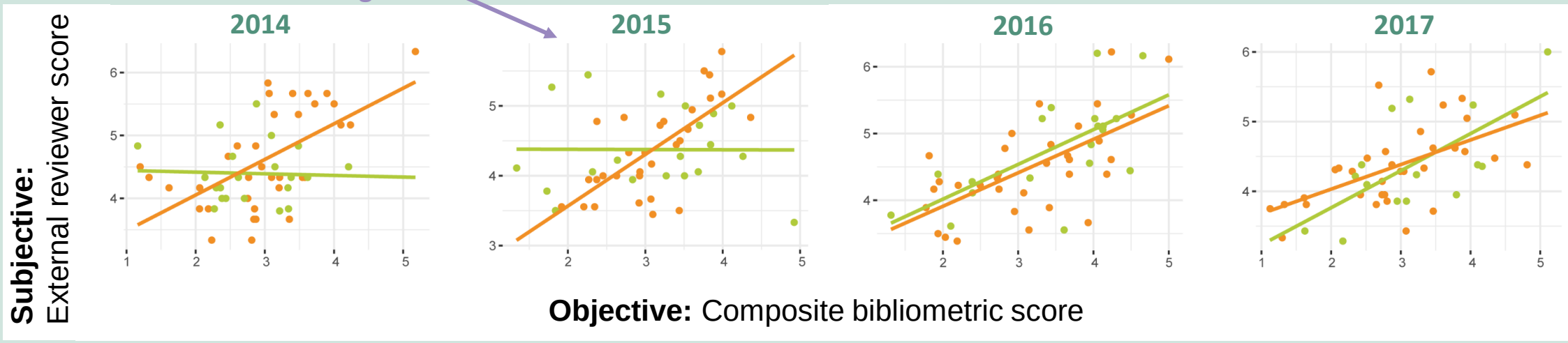


Gender Bias Impacts Top-Merited Candidates.
Andersson et al., Front. Res. Metr. Anal., 2021
https://doi.org/10.3389/frma.2021.594424

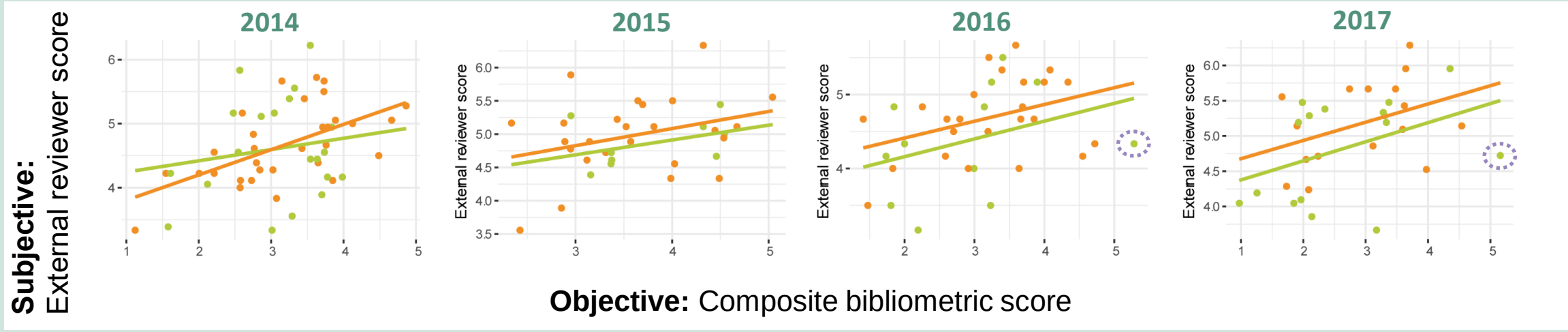
Women receive lower merit scores for equal objective merits

unconscious bias debate and trainings at KI

Assistant Professor



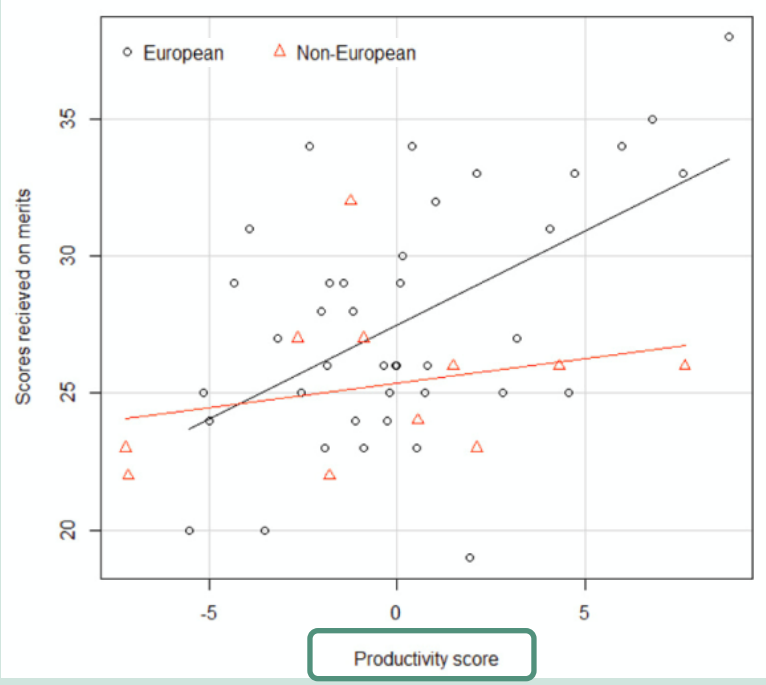
Senior Researcher



Gender Bias Impacts Top-Merited Candidates.
Andersson et al., Front. Res. Metr. Anal., 2021
https://doi.org/10.3389/frma.2021.594424

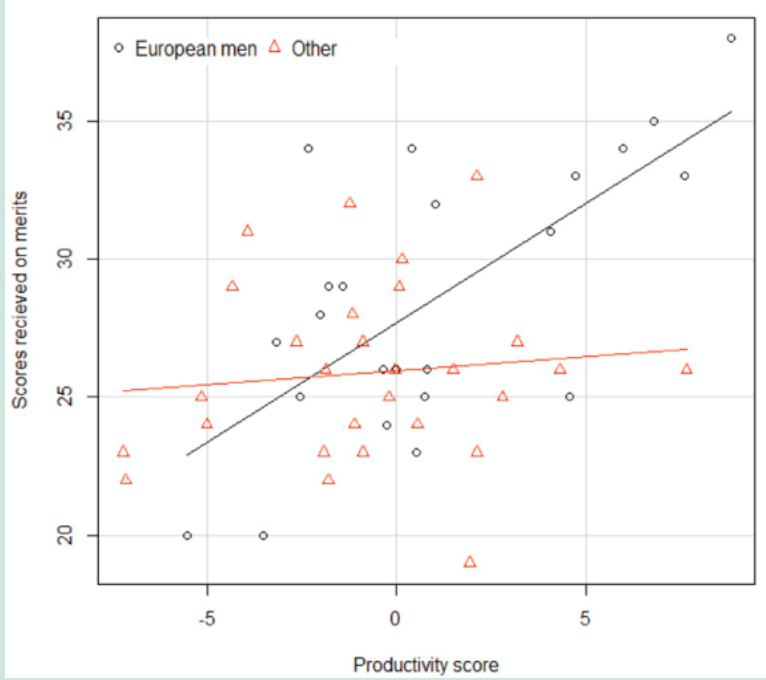
Positive Bias for European Men in Peer Reviewed Applications for Faculty Positions

Nationality



total number of citations
total number of publications
number of first author publications
number of last author publications
H-index
high impact publication with lead author position (yes or no)

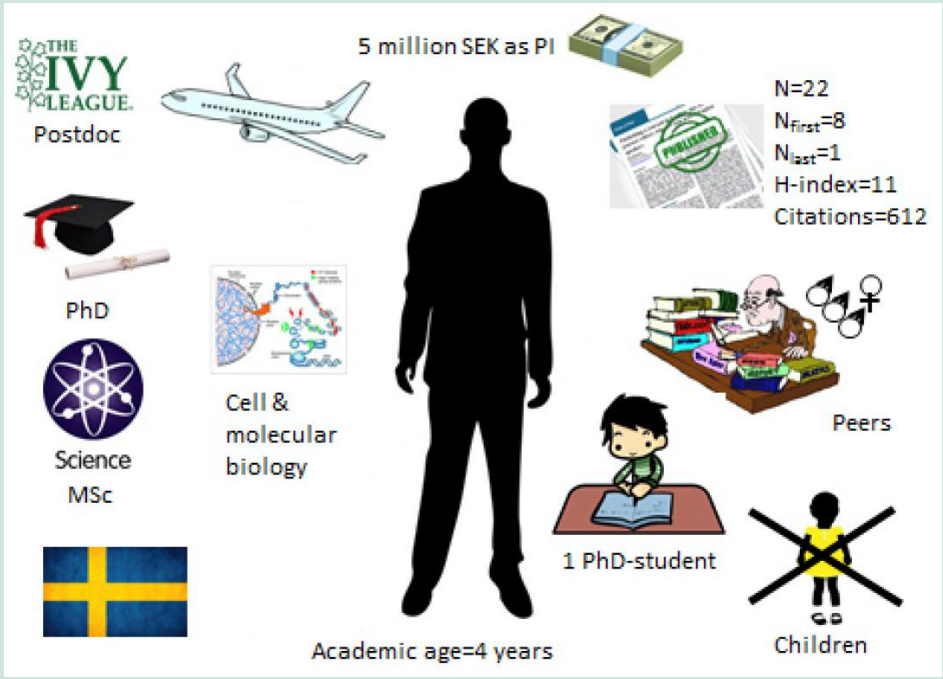
♂ EU vs. all others



Holst S and Hägg S. *Positive bias for European men in peer reviewed applications for faculty position at Karolinska Institutet*. *F1000Research* 2018, **6**:2145 https://doi.org/10.12688/f1000research.13030.2

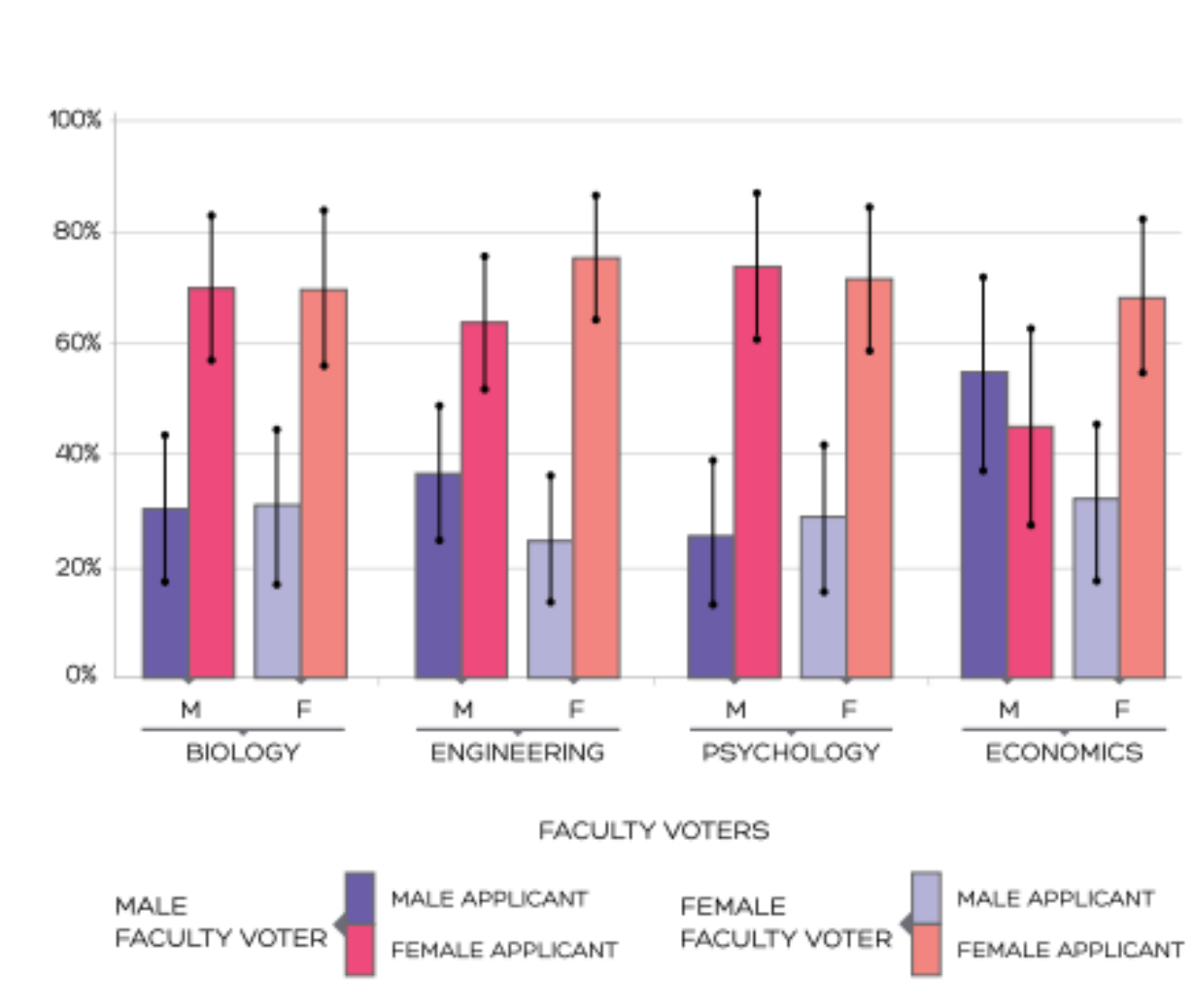
Positive Bias for European Men in Peer Reviewed Applications for Faculty Positions

Characteristics of an average successfull applicant



Holst S and Hägg S. *Positive bias for European men in peer reviewed applications for faculty position at Karolinska Institutet. F1000Research* 2018, **6**:2145 https://doi.org/10.12688/f1000research.13030.2

National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track

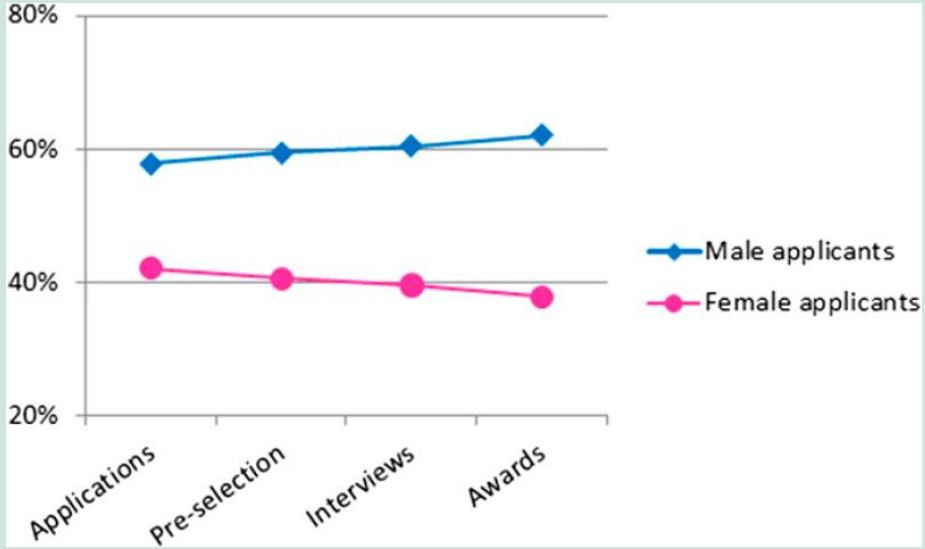


- actual experiment that the reviewers were aware of

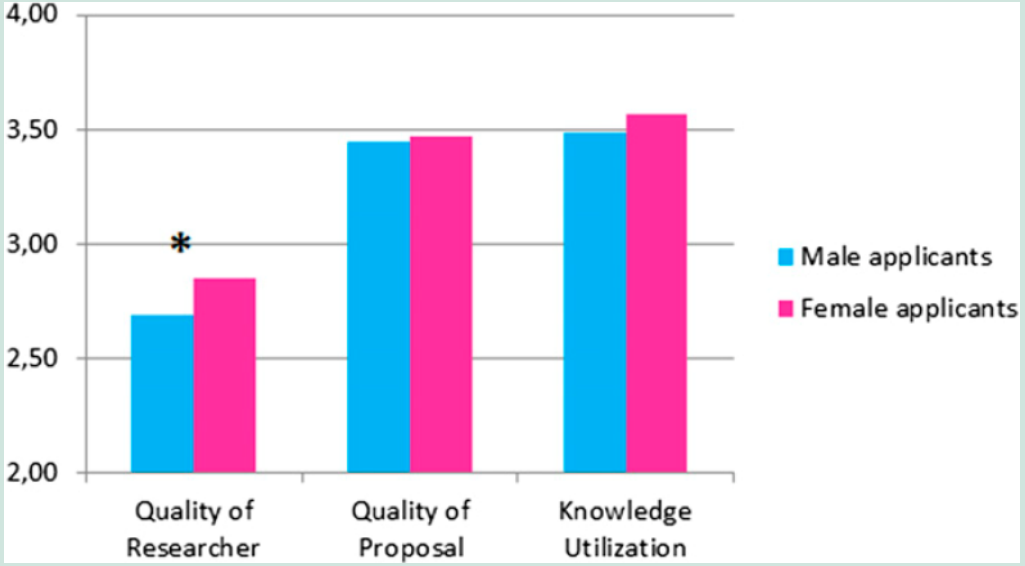
Williams WM, Ceci SJ. National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track. *Proc Natl Acad Sci U S A*. 2015;112(17):5360-5365. doi:10.1073/pnas.1418878112

Study: Gender contributes to personal research funding success in The Netherlands

Success rates for male and female applicants for each phase in the grant review procedure.



Committee evaluations for each evaluation criterion.



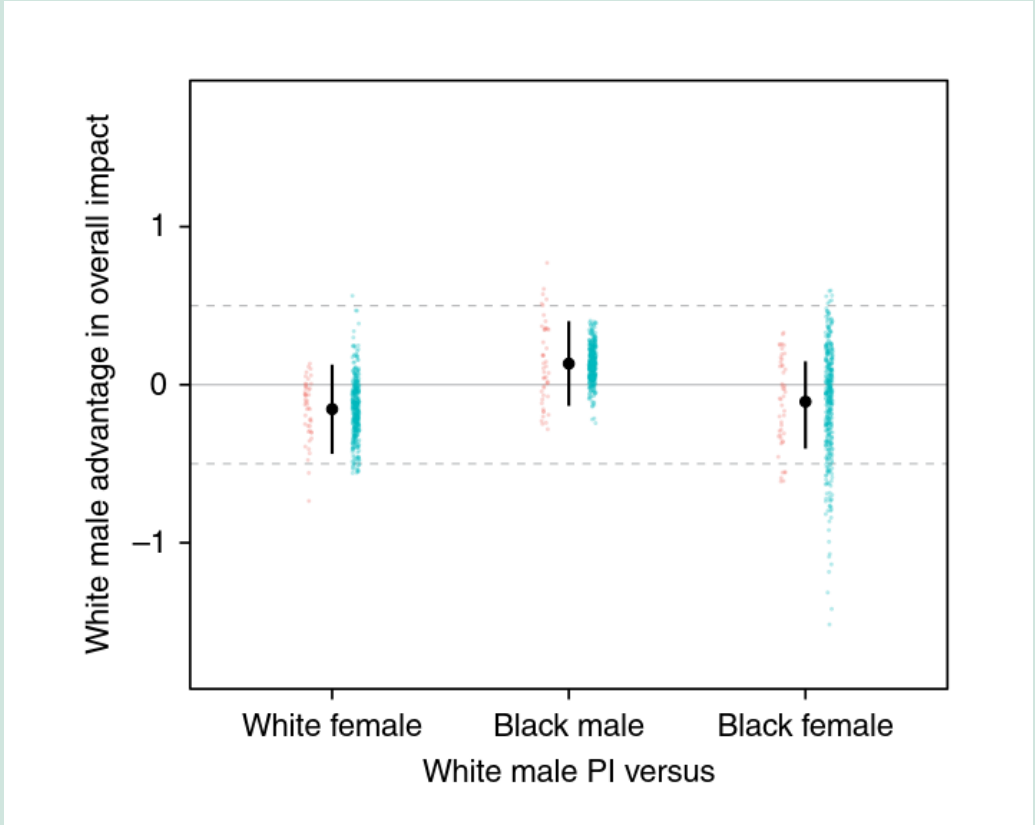
Rating: nine-point Likert Scale

1	*„excellent“*
↑	
9	*„unsuccessful“*

Lower scores thus indicated more **favorable evaluations** and led to **higher prioritization of applicants**.

van der Lee R, Ellemers N. *Gender contributes to personal research funding success in The Netherlands.* *Proc Natl Acad Sci U S A*. 2015;112(40):12349-12353. doi:10.1073/pnas.1510159112

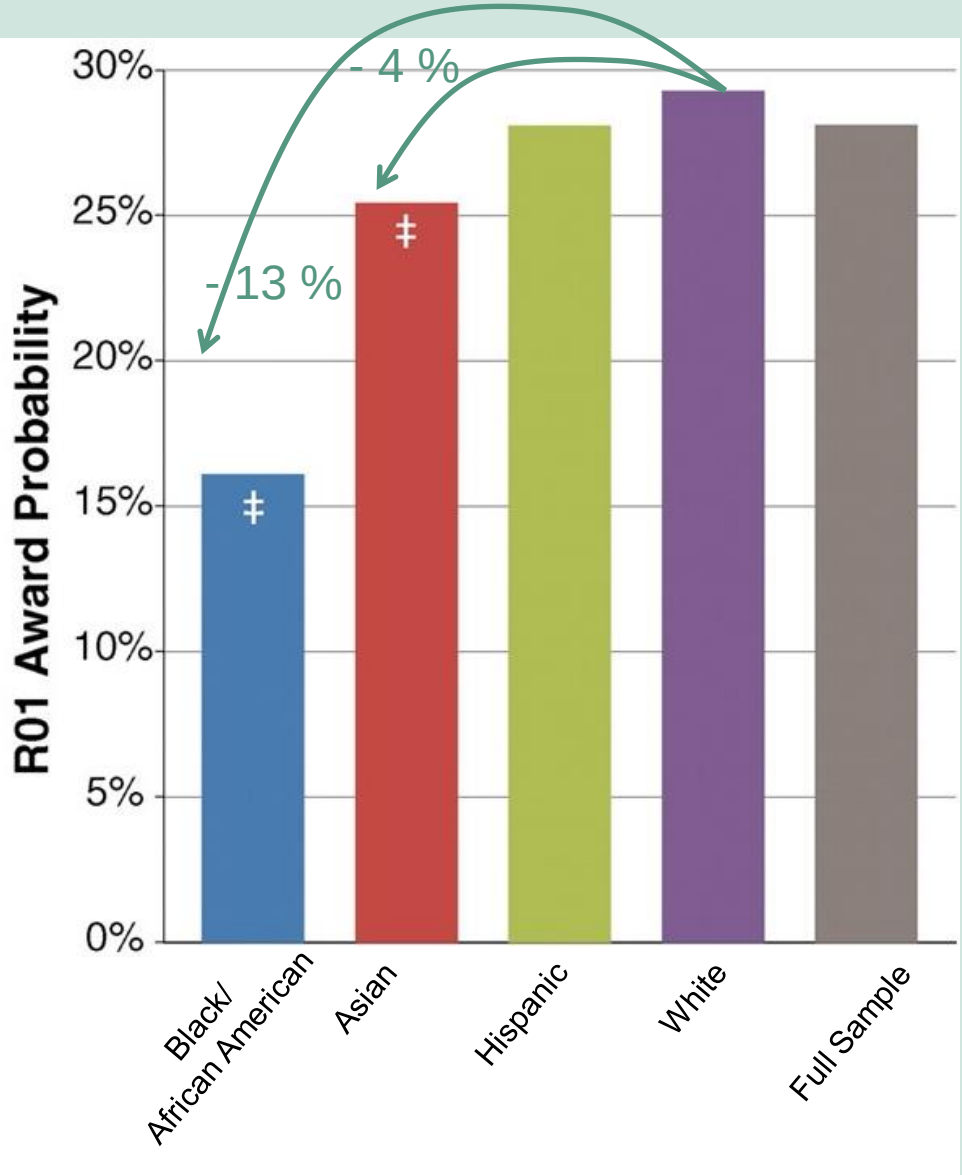
Little race or gender bias in an experiment of initial review of NIH R01 grant proposals



- actual experiment that the reviewers were aware of

Forscher, P.S., Cox, W.T.L., Brauer, M. *et al.* *Little race or gender bias in an experiment of initial review of NIH R01 grant proposals.* Nat Hum Behav **3**, 257–264 (2019). https://doi.org/10.1038/s41562-018-0517-y

NIH Research Awards: White researchers are most likely to receive research awards



Years 2000 - 2006

N= 83 188 grant applications
N = 40 069 unique investigators

Applicant distribution:

Black / African American	1,4 %
Asian	16,2 %
Hispanic	3,2 %
White	69,9 %

Ginther DK, Schaffer WT, Schnell J, et al. *Race, ethnicity, and NIH research awards. Science*. 2011;333(6045):1015-1019. doi:10.1126/science.1196783

Take Home Message: **We are all biased when evaluating scientists**

So what now? How to prevent it?

Quelle: Van den Brink (2015: 199; © Isabelle Dinter).

“Human freedom involves our capacity to pause between the stimulus and response and, in that pause, to choose the one response toward which we wish to throw out weight. The capacity to create ourselves, based upon this freedom, is inseparable from consciousness or self-awareness”

- Rollo May, Viktor Frankl

Ross, Howard J. *Everyday Bias. Identifying and Navigating Unconscious Judgements in our Lives*.2020. https://howardjross.com/books/everyday-bias/

Overcoming Bias

Snap into System II

P *ay attention*

A *cknowledge your assumptions*

U *nderstand your perspective*

S *eek different perspectives*

E *xamine your options and make a decision*

Ross H. *Everyday Bias - Identifying and Navigating Unconscious Judgments in Our Daily Lives*. 2014

How to learn to disengange from bias

I. Recognize that bias is a normal part of the human experience
   remove self-criticism about our biases and take on the task of self-exploration

II. Develop the capacity for self-observation

III. Practice constructive uncertainty
   start to engage your prefrontal cortex more: PAUSE!

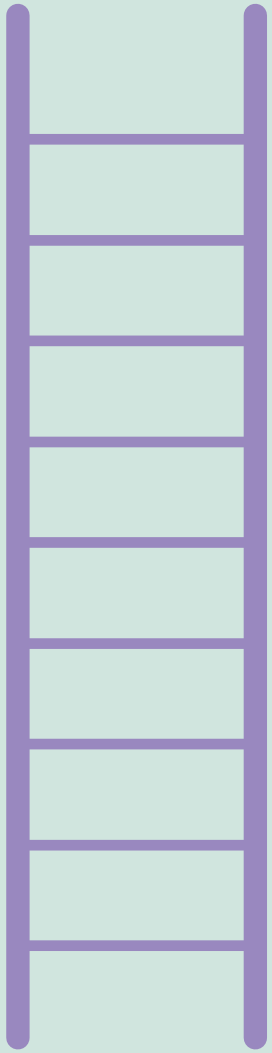
IV. Explore awkwardness or discomfort

V. Engage with people in groups you may not know very well, or about whom you harbor biases
   get to know other perspectives and worldviews

VI. Get feedback and data

Ross H. *Everyday Bias - Identifying and Navigating Unconscious Judgments in Our Daily Lives*. 2014

The Ladder of Perception



6. Action	on the basis of conviction	I will also not say hi to her anymore
5. Conviction	reinforcement, General validity	She is arrogant
Feeling **4. Valuation**	on the basis of my own values meaning, assumption	That is not very nice / asocial
3. Interpretation	brain is looking for meaning rummaging through the drawer of experience	She is pretending not to see me
2. Perception	details, selection of information	Ursula is not looking at me
1. Situation	random	Walk through corridor

Some easy things **you** can do to reduce bias during evaluation processes

I. Instead of feeling confident in your objectivity, before engaging in peer review, **reflect on all humans' susceptibility to bias**.

II. Allow **sufficient time** and try to **avoid 'multi-tasking'** when reviewing a scientific work.

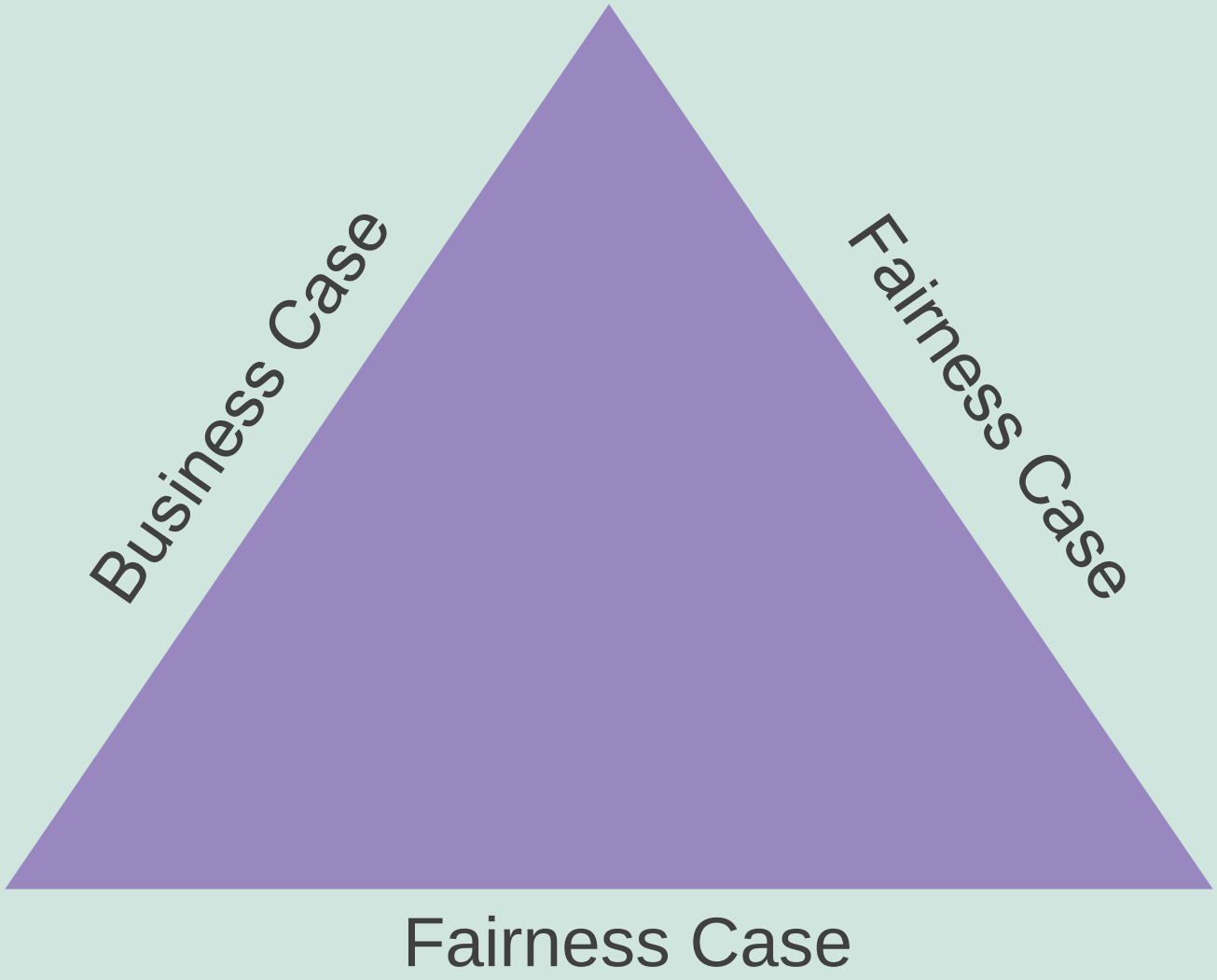
III. Before engaging in peer review**, imagine in detail a [female / other diversity dimension] scientific leader**.

IV. As far as possible, undertake to **review the assessment criteria before** evaluating manuscripts or applications.

V. Challenge yourself with thought experiments: would your evaluation change if the investigator were of a different gender (or race, or from a different institution)?

Kaatz A, Gutierrez B, Carnes M. *Threats to objectivity in peer review: the case of gender*. *Trends Pharmacol Sci*. 2014;35(8):371-373. doi:10.1016/j.tips.2014.06.005

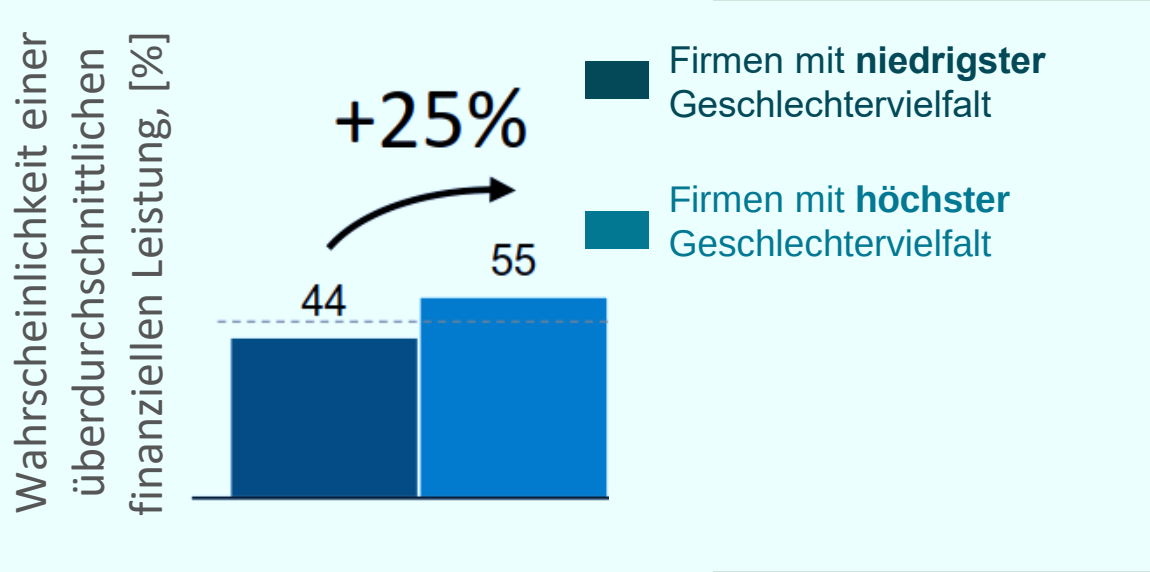
The Magic Triangle of Diversity Management



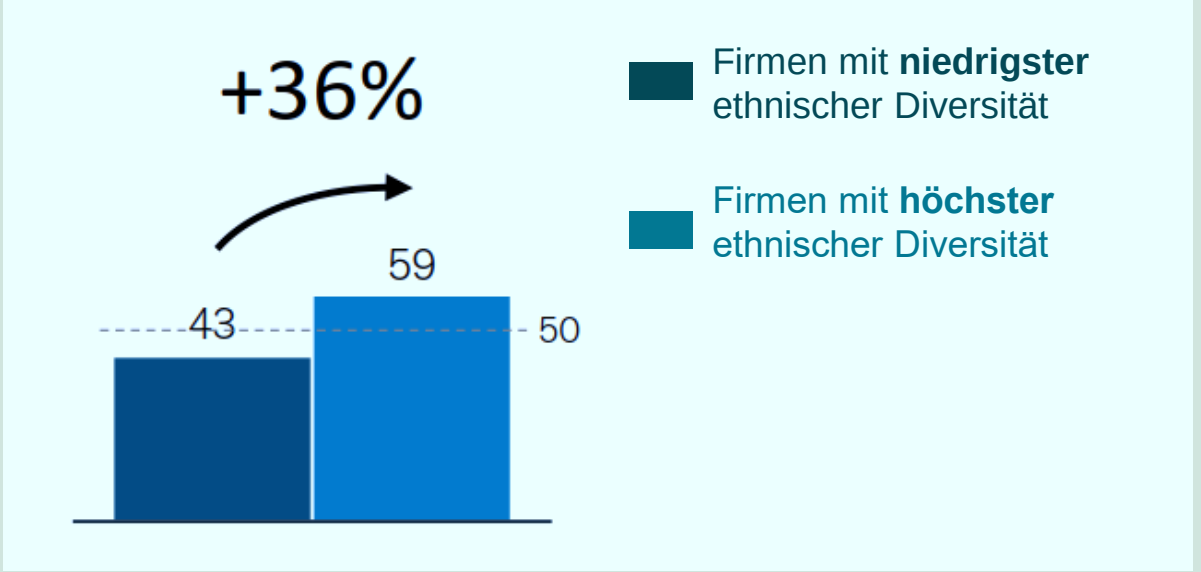
Source: Susanne Dammer

„Diversity“ als Business Case

Geschlechterdiverse Teams haben eine **25%** höhere Wahrscheinlichkeit, überdurchschnittliche finanzielle Leistungen zu erbringen



Ethnisch diverse Teams haben eine **36%** höhere Wahrscheinlichkeit, überdurchschnittliche finanzielle Leistungen zu erbringen



McKinsey&Company

Diversity wins. How inclusion matters.
May 2020

Some types of cognitive bias and their potential relevance to scientific peer review

Cognitive Bias	Relevance to peer review
Anchoring bias: over-reliance on one piece of information (the anchor) or a 'first impression' when adjusting one's opinion in response to subsequent information.	If the reviewer likes the lab where the principal investigator (PI) trained or, for example, does not like the particular animal model being used, this will affect the processing of additional information in the proposal.
Backfire effect: instead of adjusting an opinion in response to disconfirming information, one more strongly adheres to the original opinion.	A reviewer might hold to an initial opinion or score despite compelling information to the contrary.
Blind-spot bias: the ability to see cognitive bias in others but not in oneself.	A reviewer is sincere in their belief that they are objective and without bias.
Confirmation bias: information is selectively marshaled to find support for an existing impression or assumption.	If a reviewer rates a proposal highly, weaknesses might be overlooked.
Ecological fallacy: making an inference about an individual based on aggregate data or assumptions about a group; making assumptions about individuals based on cultural stereotypes is a type of ecological fallacy.	Because fewer women lead large center grants, making the assumption that an individual woman is less able to lead a large program; because overall Black student achievement is lower than for White students, making the assumption that an individual Black student is less prepared.
Halo effect: assuming, because someone is competent (or incompetent) in one area, that they are competent (or incompetent) in other areas. Individuals in high-status groups are assumed to be competent across a range of activities.	May result in more 'benefit of the doubt' for a PI at a prestigious institution and the need for a higher level of proof of competence for a PI at a lower- ranked school; could also lead to more influence of a statement by a high- versus lower-status individual in a study section.
In group/out group bias: it takes less information for positive judgments when the rater and target share even minimal affinity than when they do not, and less information is required for a negative judgment when they share no affinity.	The alignment of discipline, social networks, previous interactions, age, gender, or race between reviewer and R01 applicant or author could influence the review of the grant or manuscript positively or negatively.
Shifting standards of reference: cultural stereotypes set different mental frameworks for judging the work of individuals. For example, verbal skills were rated lower if raters thought an author was Black versus White. When the stereotype is of lower competence (e.g., women in mathematics, Blacks in academia), the performance needed for judgment of minimal competence is lower (e.g., good in mathematics – for a woman) but higher to confirm competence (i.e., there is empirical support for the adage that a member of a low-status group 'needs to be twice as good' to get ahead).	It is possible that grants or manuscripts will be perceived as being less well written if the reviewer knows the PI is Black. The greatest differences in funding outcomes at NIH for low- versus high-status groups is not at the T- or K-award level (minimal standard) but at the R01 level (confirmatory standard): this is what the shifting-standards type of implicit bias would predict. It is also possible that highly positive descriptors for a low-status PI do not translate into a fundable score and that more negative descriptors for a high-status PI would not prevent a fundable score.

Kaatz A, Gutierrez B, Carnes M. *Threats to objectivity in peer review: the case of gender*. *Trends Pharmacol Sci*. 2014;35(8):371-373. doi:10.1016/j.tips.2014.06.005

Bias-enhancing conditions surrounding scientific peer review

Condition promoting cognitive bias	Potential relevance to R01 review
Time pressure: because cognitive biases are efficient, time pressure promotes their influence on decision-making.	Reviewers have multiple demands on their time and are frequently under time-constraints to finish reviews.
Belief in one's personal objectivity: in a constructed hiring setting, raters who were primed to believe they were objective gave more biased ratings than did non-primed controls.	Being an NIH scientific reviewer may prime belief in one's objectivity as a scientist.
Semantic gender priming: exposure to words more strongly associated with male (e.g., aggressive, competitive) or female (e.g., supportive, nurturing) stereotypes affects subsequent evaluation of male or female targets.	Emphasis on funding scientists willing to engage in 'risk-taking' or achieve 'technological breakthrough' would be predicted to enhance evaluations of male applicants.

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Tokenism

Alle Jahre wieder: Rainbow-Washing zum Pride Month

“Eine Regenbogenflagge im Brandlogo und ein Post auf LinkedIn reichen bestimmt aus”

Frage: Wie divers sieht es in den Unternehmen wirklich aus?

69,6 % Männeranteil in den **Aufsichtsräten** der Top 200 Unternehmen in Deutschland.

85,3 % Männeranteil in den **Vorständen** der Top 200 Unternehmen in Deutschland.

70,6 % Männeranteil in **Führungspositionen** in Deutschland.

91,0 % **Führungskräfte ohne Migrations-hintergrund** in Spitzenpositionen.

Neue Narrative, *Diversity ist kein Aushängeschild!*

Wie „Wir leben Diversität“ in Organisationen aussieht