Gender Imbalance in Science

Gender and Science Journal Club





Universitat Pompeu Fabra *Barcelona*



Who are we?



Pallabi Sengupta



Elisa Ruiz Tada



Cristina Ionna Galusca



Irene Torres



Katharina Glomb



Nara Ikumi Montserrat



Loreto Nácar



Adrián Ponce-Alvarez



Mohit Hemchandra Adhikari













Steve Jobs by Walter Isaacson













Percent of web respondents with each score



Click for detailed summary

OUTLINE

- What is the situation in STEM?
- Why is it happening?
- How to solve it?

Most of students and graduates are women, but the representation declines at further levels that open the way to research careers.



Leaky pipeline



Leadership



Funding GapSpanish Ministry of Science and Innovation Report (2011):





UPF



European Commission



Leadership gap Salary gap Funding gap

Inborn Cognitive Sex Differences

The literature does not show any empirical evidence that cognitive sex differences may account for gender differences in scientific careers (NAS, 2007)

Meta-analysis of cognitive studies on maths problems, spatial rotations (behavior, fMRI), comparison of levels of sex hormones with task performance.

Girls' underachievement in maths has narrowed in all countries and is on the way to disappearing in most of them (Else-Quest et al., 2010; Sapienza, 2008).



THE NATIONAL ACADEMIES PRESS Washington, D.C. www.nap.edu

The Darwin Awards: sex differences in idiotic behaviour

BMJ 2014 ; 349 doi: http://dx.doi.org/10.1136/bmj.g7094 (Published 11 December 2014) Cite this as: *BMJ* 2014;349:g7094



Male and female Darwin Award winners. Line H₀ indicates expected percentages under the null hypothesis that males and females are equally idiotic





Gender Stereotyping

Science faculty's subtle gender biases favor male students

Corinne A. Moss-Racusin^{a,b}, John F. Dovidio^b, Victoria L. Brescoll^c, Mark J. Graham^{a,d}, and Jo Handelsman^{a,1}

^aDepartment of Molecular, Cellular and Developmental Biology, ^bDepartment of Psychology, ^cSchool of Management, and ^dDepartment of Yale University, New Haven, CT 06520

Edited* by Shirley Tilghman, Princeton University, Princeton, NJ, and approved August 21, 2012 (received for review July 2, 2012)

Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has discrimination in these domains" (10). This asser

N=127 faculty members from biology, chemistry and physics rate an applicant for a lab manager position



Science faculty's subtle gender biases favor male students

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SANC

Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has gender disparity in science (9–11), and that it "is no discrimination in these domains" (10). This asser

"Our results revealed that **both male and female faculty** judged a female student to be **less competent** and **less worthy** of being hired than an identical male student, and also offered her a **smaller starting salary** and **less career mentoring**."

"Female student was less likely to be hired than the male student because she was perceived as less competent"



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home > current issue > letter > abstract

NATURE GEOSCIENCE | LETTER

Gender differences in recommendation letters for postdoctoral fellowships in geoscience

Kuheli Dutt, Danielle L. Pfaff, Ariel F. Bernstein, Joseph S. Dillard & Caryn J. Block

Affiliations | Contributions | Corresponding author

Nature Geoscience 9, 805-808 (2016) | doi:10.1038/ngeo2819 Received 30 April 2016 | Accepted 31 August 2016 | Published online 03 October 2016



1,224 recommendation letters, submitted by recommenders from 54 countries, for postdoctoral fellowships in the geosciences over the period 2007–2012.

"Female applicants are **only half as likely** to receive **excellent letters versus good letters** compared to male applicants."

REPORT



Expectations of brilliance underlie gender distributions across academic disciplines

Sarah-Jane Leslie^{1,*,†}, Andrei Cimpian^{2,*,†}, Meredith Meyer³, Edward Freeland⁴

+ Author Affiliations

√*These authors contributed equally to the work.

Science 16 Jan 2015: Vol. 347, Issue 6219, pp. 262-265 DOI: 10.1126/science.1261375

N= 1820 faculty, postdoctoral fellows, and graduate students from 30 disciplines (12 STEM, 18 SocSci/Hum) were asked about their field.

Participants were asked to rate their agreement with four statements concerning what is required for success in their field (e.g., "Being a top scholar of [discipline] requires a special aptitude that just can't be taught")

Expectations of brilliance underlie gender distributions across academic disciplines Sarah-Jane Leslie *et al.*



Field-specific ability beliefs (higher numbers indicate greater emphasis on brilliance)





Young, talented and fed-up: scientists tell their

stories

Inga Vesper

10%.

04 November 2016

Scientists starting labs say that they are under

Researchers analysed 200,000 papers in 5 journals from 1950 to 2015.

First, they trained a machine-learning algorithm to accurately calculate the citations for each paper first-authored by a man using as many non-gender-related factors as possible. Then, they unleashed their algorithm on the papers with female first authors.

"This set of papers (from 1985 onwards) had actually received around 6% fewer citations than their male-authored counterparts. But the algorithm predicted that the papers should have got 4% more citations than did those authored by men."

Silencing and isolation

Not being seen, heard, read, cited, invited.

nature International weekly journal of science

Gender matters: A call to commission more women writers

Daniel Conley & Johanna Stadmark

We found that the proportion of women commissioned to write Nature News & Views articles was much lower than the proportion of women scientists overall: female authorship was

17.3% for the biological and chemical sciences, 8.1% for physical sciences and 3.8% for Earth and environmental sciences. However, the pool of women scientists in these disciplines was significantly higher than the proportion of female authorship at 32%, 16% and 20%, respectively.

http://biaswatchneuro.com/

Symposia on Memory Organizers: Nicolas Brunel, Sandro Romani & Alex Roxin Funded by: <u>Simons Foundation</u>, <u>HHMI</u> Janelia Research Campus Invited speaker gender ratio: 2 Women : 23 Men (8%) Estimated* base rate of females in the field: 34%

BCBT2016 – Barcelona cognition, brain and technology summer school Organizers: Paul Verschure, Andreas Engel and Anna Mura Funded by: <u>EU projects socSMCs</u> Invited speaker gender ratio: **1 Woman** : **17 Men (6%)** Estimated* base rate of females in the field: **24%**

Survey of Academic Field Experiences (San Report Harassment and Assault

Kathryn B. H. Clancy¹*, Robin G. Nelson², Julienne N. Ruti

1 University of Illinois, Urbana-Champaign, Department of Anthropology, Urbana, Illinois, Uni Saratoga Springs, New York, United States of America, 3 University of Illinois, Chicago, Depai United States of America, 4 Harvard University, Department of Human Evolutionary Biology, C

Internet-based survey of field scientists (N = 666) to characterize these experiences. Have you ever personally experienced:

■ Inappropriate sexual remarks

PLOS ONE

Trainees

comments about physical beauty

- cognitive sex differences
- or other jokes?

Have you ever experienced
physical sexual harassment
unwanted sexual contact
or sexual contact in which you could not or did not give consent?



Survey of Academic Field Experiences (SAFE): Trainees Report Harassment and Assault

Kathryn B. H. Clancy¹*, Robin G. Nelson², Julienne N. Rutherford³, Katie Hinde⁴

1 University of Illinois, Urbana-Champaign, Department of Anthropology, Urbana, Illinois, United States of America, 2 Skidmore College, Department of Anthropology, Saratoga Springs, New York, United States of America, 3 University of Illinois, Chicago, Department of Women, Children, and Family Health Science, Chicago, Illinois, United States of America, 4 Harvard University, Department of Human Evolutionary Biology, Cambridge, Massachusetts, United States of America



Gendered Division of Labor





Family-or-science dilemma (women have to choose, men don't)

http://www.unwomen.org/



HOUSEWORK

2-10 times





White Paper on the Position of Women in Science in Spain, 2010



Intersectional Feminism



The field starts taking the problem seriously

EDITORIAL

nature immunology

Science and gender

Gender stereotypes prevent women from attaining full recognition of their research careers.

Science

Gender inequality in science

How should a better gender balance be achieved?

By Andrew M. Penner

National Institutes of Health addresses the science of diversity

Hannah A. Valantine^{a, 1} and Francis S. Collins^b

^aChief Officer for Scientific Workforce Diversity, US National Institutes of Health, Bethesda, MD 20814; and ^bDirector, US National Institutes of Health, Bethesda, MD 20814



What Can We Do?

Individual

- Set yourself objective criteria before evaluating someone's work.
- Let's listen to women more.
- Let's support women in small things.
- Say NO to sexism.
- Cite women.

https://anneslist.net/

Collective

- Discuss about this problem with your colleagues/students.
- Increase awareness.
- Report gender imbalances on meetings or committees (<u>www.biaswatchneuro.com</u>).

Make protocols/information about sexual harassment available.
 (<u>https://www.upf.edu/upfigualtat/</u>)

IMPORTANT READS

WHY SO SLOW?

Commigned Material

THE ADVANCEMENT OF WOMEN

VIRGINIA VALIAN

"COMPELLING." -- NATALIE ANGIER, NEW YORK TIMES

Interaction National CORDELIA FINE The Real Science Behind Sex Differences DELUSIONS **OF GENDER** Shortlisted for the John Llewellyn Rhys Prize 'If you believe that the tids of blue and pink that greets children in a toy or childron's clotheo shop is just about colours think again,' workingmums co.uk A brilliant feminist critic of the neurosciences ... Read her, enjoy and learn' Hilary Rose, THES copyrighted Minerod

BRAINSTORM

REBECCA M. JORDAN-YOUNG

THE FLAWS IN

THE SCIENCE OF

SEX DIFFERENCES

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Gender and Science Journal Club

Next Meeting on 13th Dec, 2016.



