Pilot survey in participation on women in Medical Physics conferences and ways to increase their participation in MP

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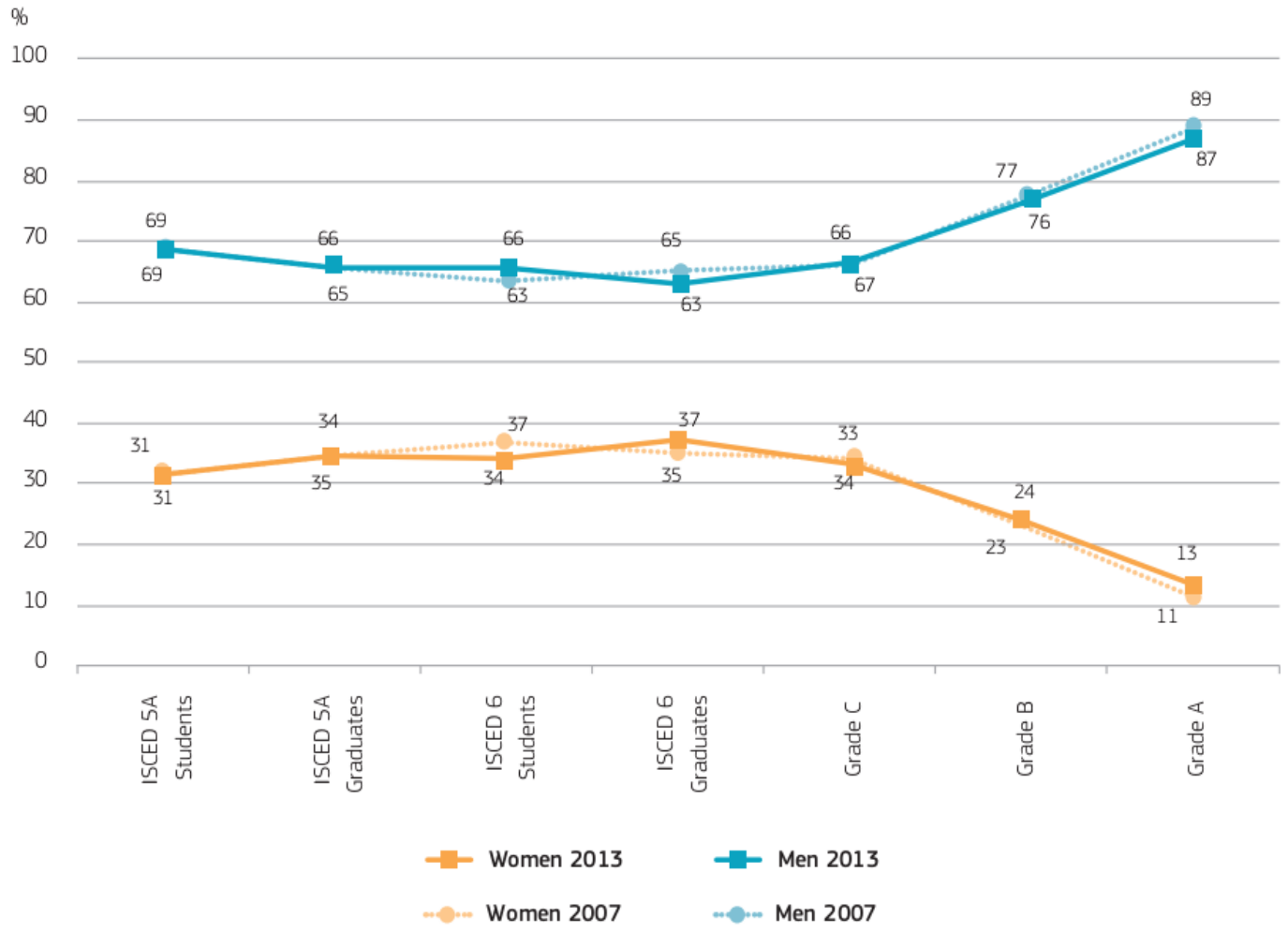
What is the situation of women in science around the world?

Figure 6.2. Proportions of women and men in a typical academic career in science and engineering, students and academic staff, EU-28, 2007–2013



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- "She figures" report by EC. Latest update in 2013
- 1999: EC adopted objective of 40% women in groups, panels, committees and projects of EU

The situation of medical physicist women in Europe and worldwide

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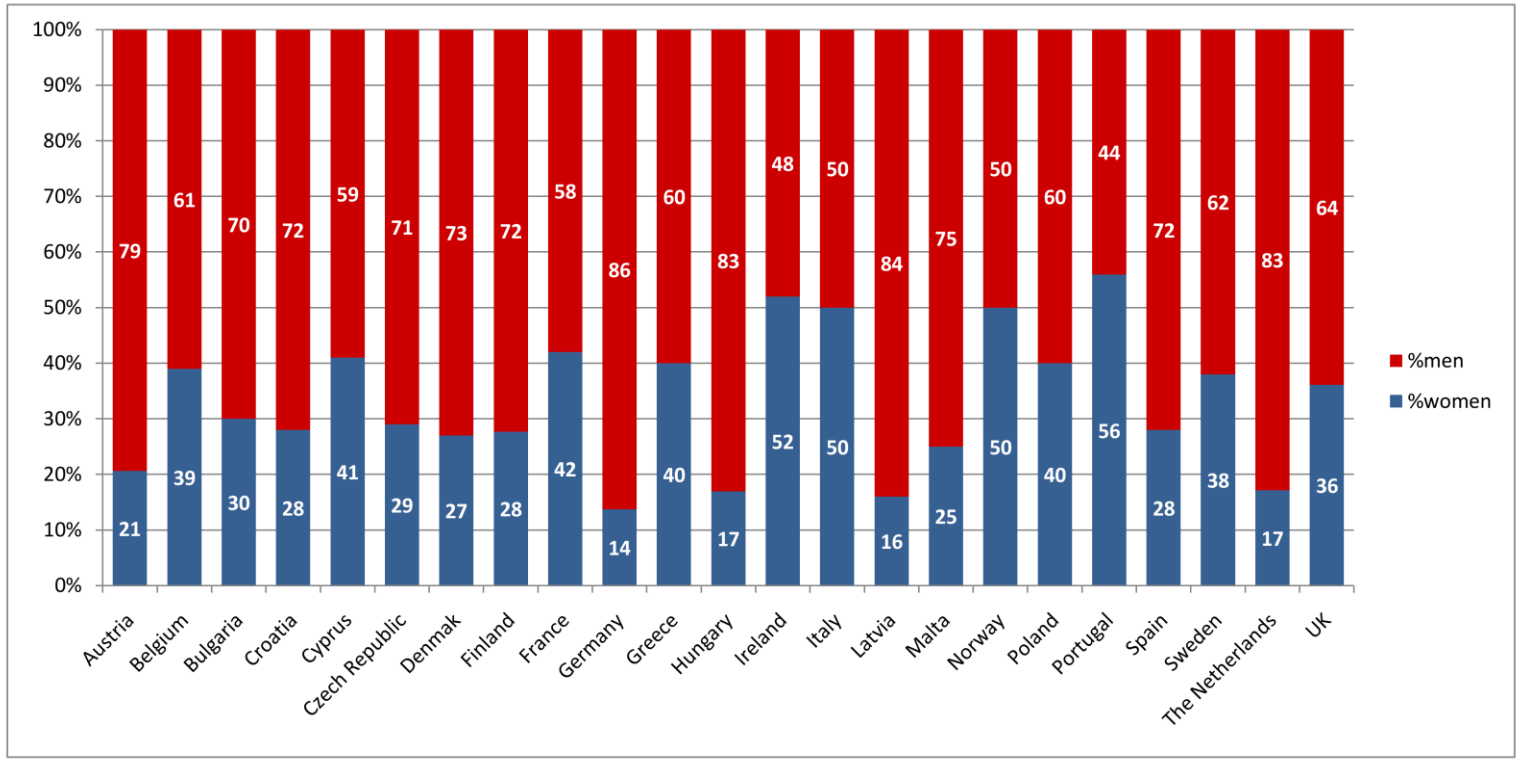
According to EFOMP survey published in 2011 with 23 countries of EU:

- 36% of women in national societies of MP (Average)
- Important cross-country disparities: 56% in Portugal vs 14% in Germany.



The situation of medical physicist women in Europe and worldwide

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Original paper

Female medical physicists: The results of a survey carried out by the International Organization for Medical Physics

Virginia Tsapaki [a, *], Madan M. Rehani [b, 1]

[a] Medical Physics Unit, Konstantopoulio General Hospital, Agias Olgas 3-5, 14233 Nea Ionia, Greece
[b] Massachusetts General Hospital and Harvard Medical School, Boston, USA

- Median values: **USA 21%** , Europe 47%, Asia 35%, Africa 33% and Latin America 24%.

- Countries with very low % of women: Germany 20%, Netherlands 21%, Spain 29% and USA 21% (country with the highest number of MP around the world!)

The situation of women in decision-making positions in MP

- Board members: 4 men- no women.
- Chairs and vice-chairs: 12 men- 3 women.

- Board members: 60% men, 40% women
  (Radiation Oncologists 80% workforce are women)

- Board members: 3 men-2 women.
- Chairs and vice-chairs: 7 men- 3 women

- No women who are chief editors of top-rated journals in our field

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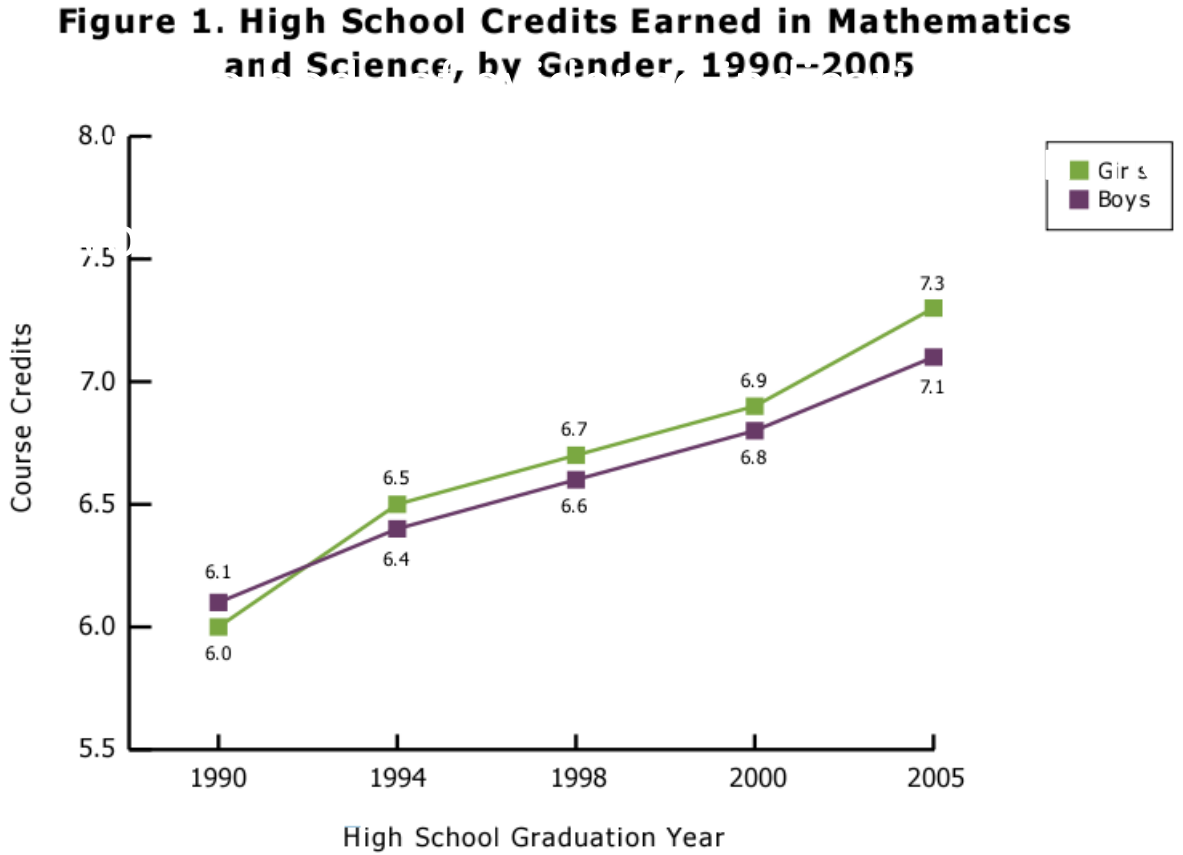
The question is then

1. Why are women MP underrepresented in well developed countries such as USA?
2. Why so few reach decision-making positions in our field?

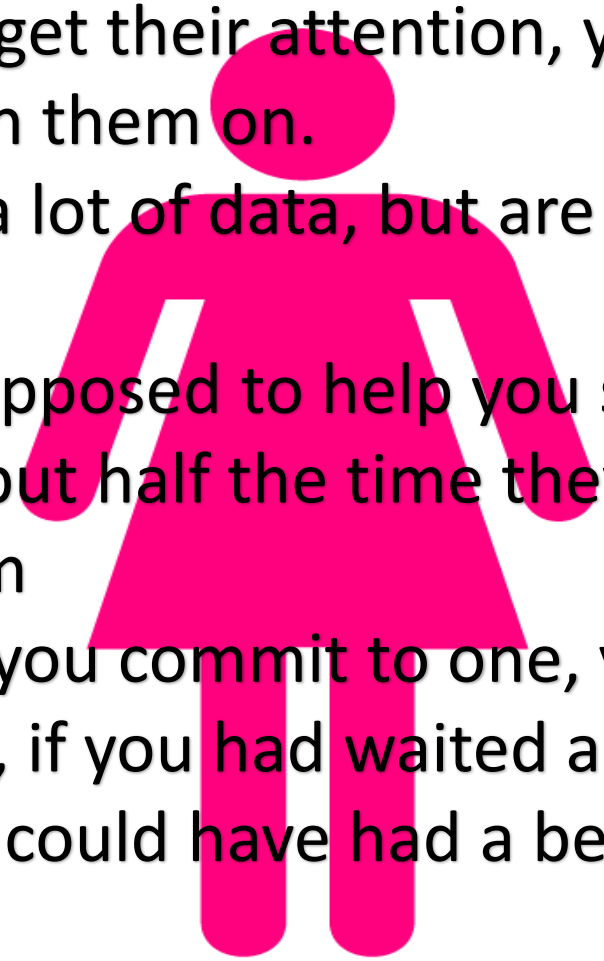
Why so few women in science?



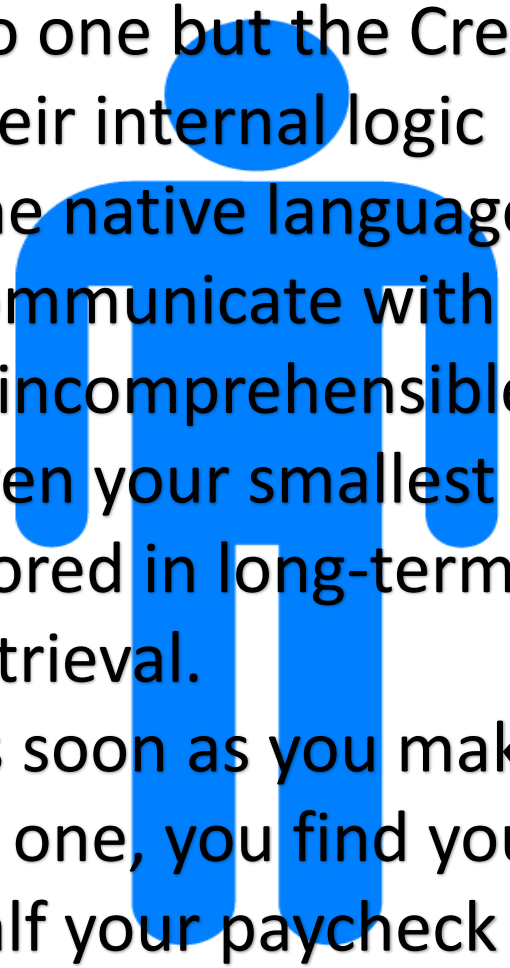
Source: U.S. Department of Education, National Center for Education Statistics, 2007, *The Nation's Report Card: America's high school graduates: Results from the 2005 NAEP High School Transcript Study*, by C. Shettle et al. (NCES 2007-467) (Washington, DC: Government Printing Office).

4 reasons why computers should be masculine or femenine

1. In order to get their attention, you have to turn them on.
2. They have a lot of data, but are still clueless
3. They are supposed to help you solve problems, but half the time they are the problem
4. As soon as you commit to one, you realize that, if you had waited a little longer, you could have had a better model.



1. No one but the Creator understands their internal logic
2. The native language they use to communicate with other computers is incomprehensible to everyone else
3. Even your smallest mistakes are stored in long-term memory for later retrieval.
4. As soon as you make a commitment to one, you find yourself spending half your paycheck on accessories for it.



Stereotypes are a social construction (Science is for boys)

Elementary students (10-11):

Change in girl's behavior!: they drew female scientists when younger and male scientists when they grew up

- Boys: 95 % male scientists
- Girls: 78 % male scientists

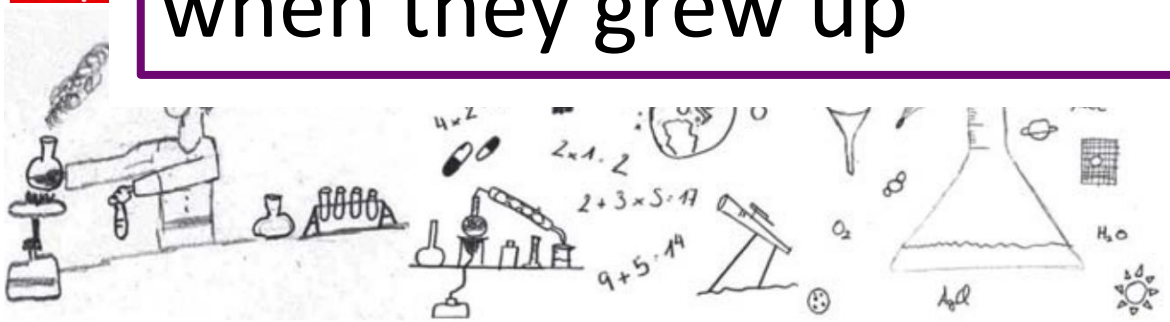
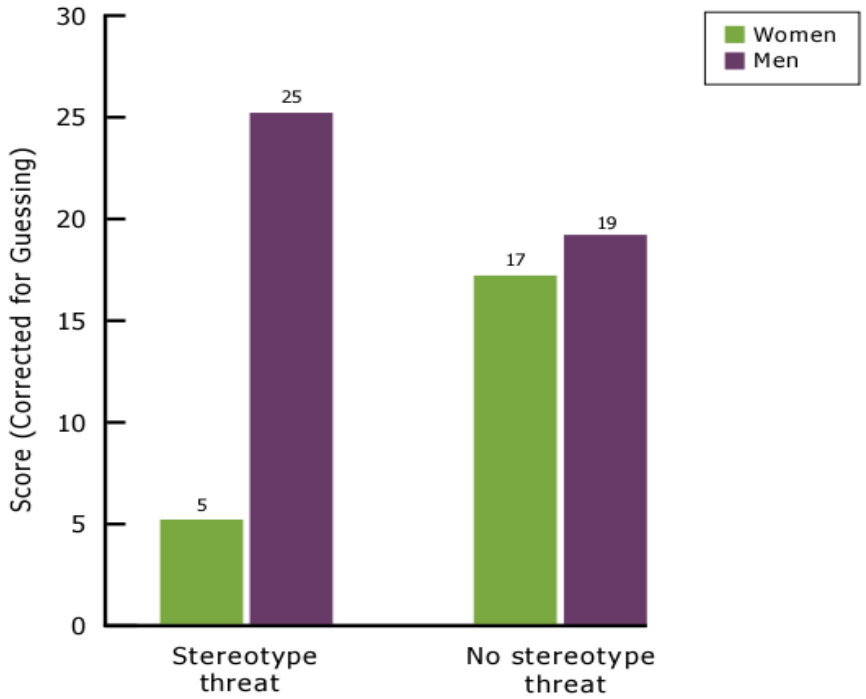


Figura 3 Representación de «la ciencia» por parte de un alumno de primer ciclo de secundaria

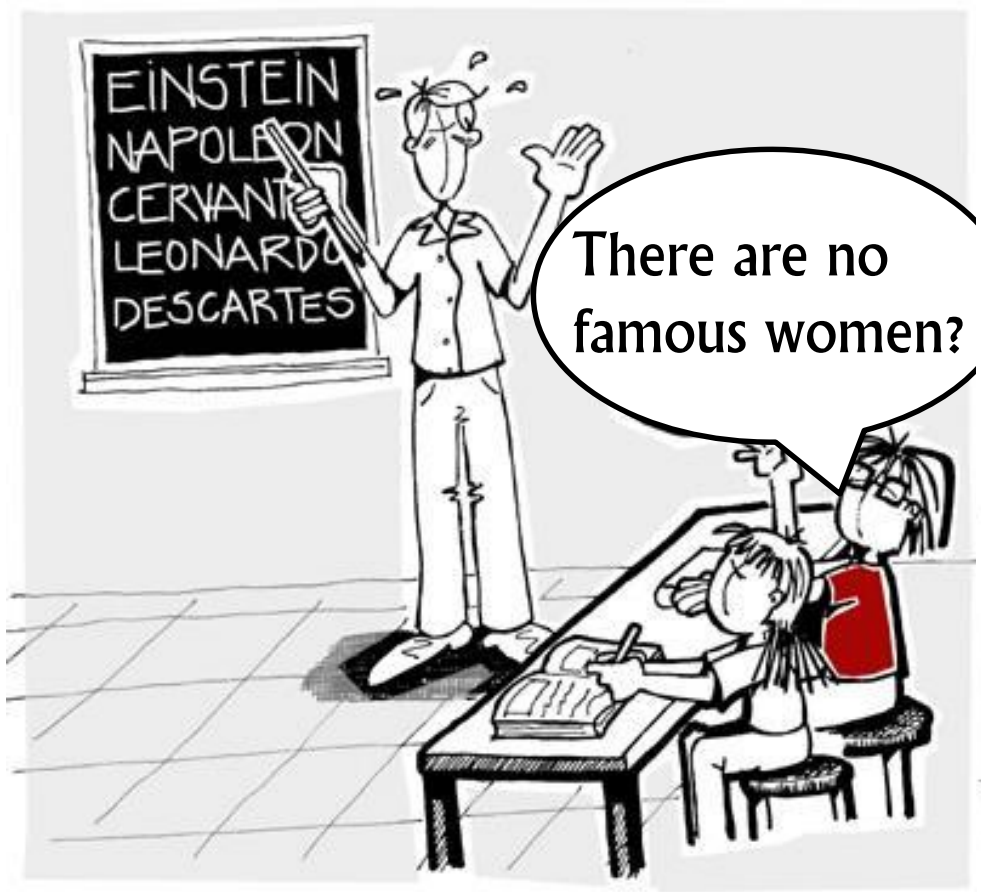
The stereotype threat

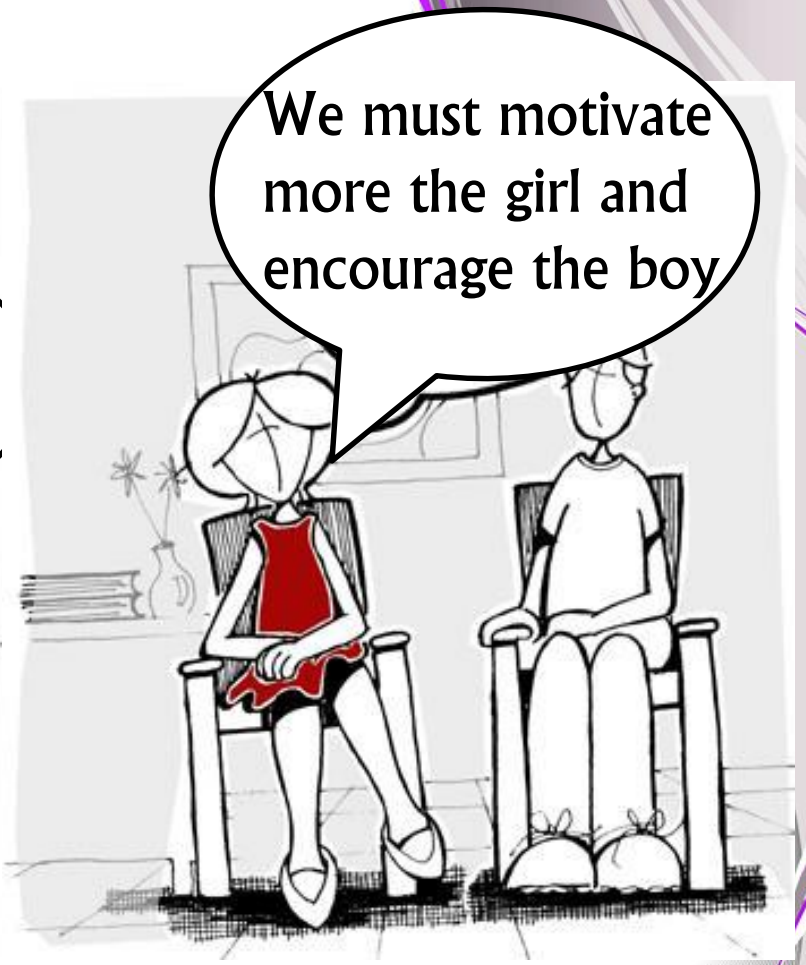
Figure 15. Performance on a Challenging Math Test, by Stereotype Threat Condition and Gender



Source: Spencer et al., 1999, "Stereotype threat and women's math performance," *Journal of Experimental Social Psychology, 35*(1), p. 13.

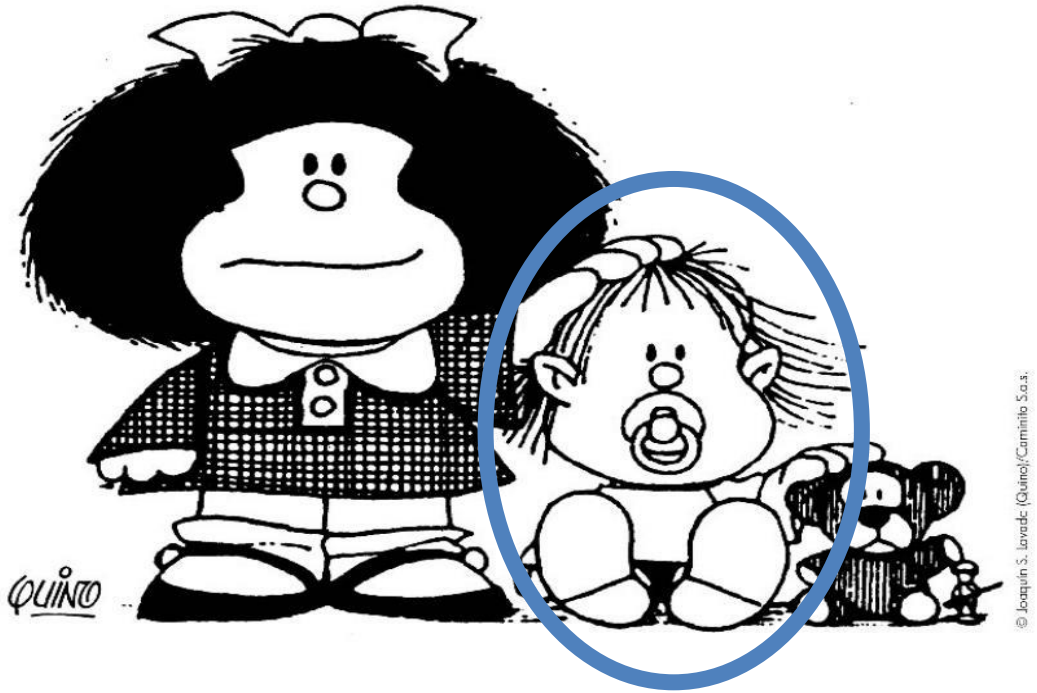
Science as a male domain in…

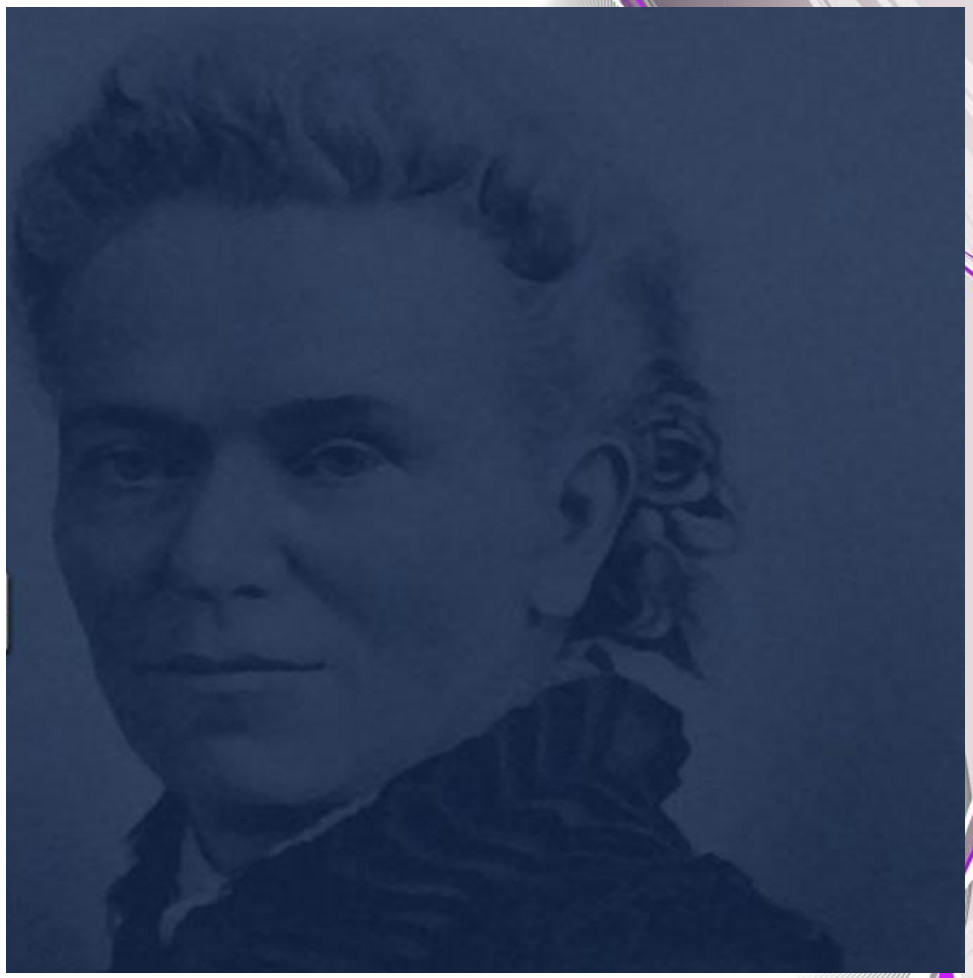




Productivity

“Those who are less well-known receive much less attention”

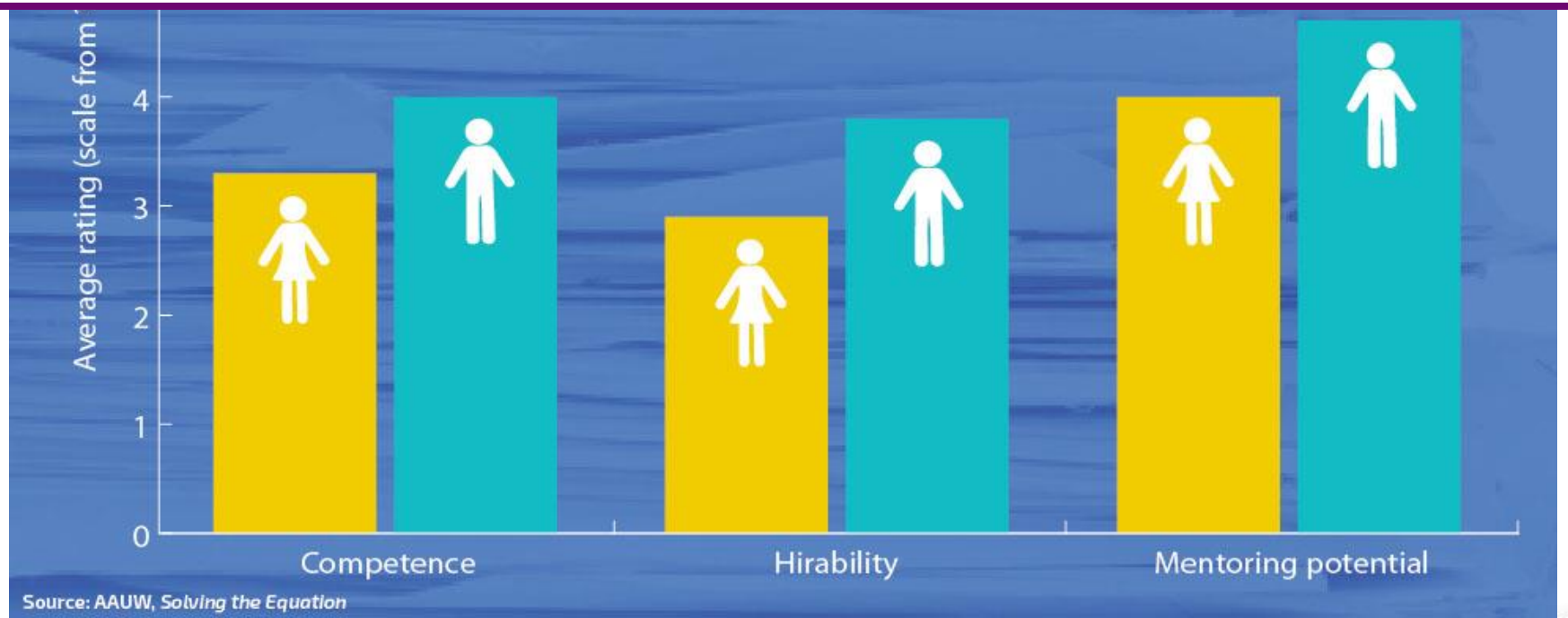




Mathew Effect

Unconscious bias

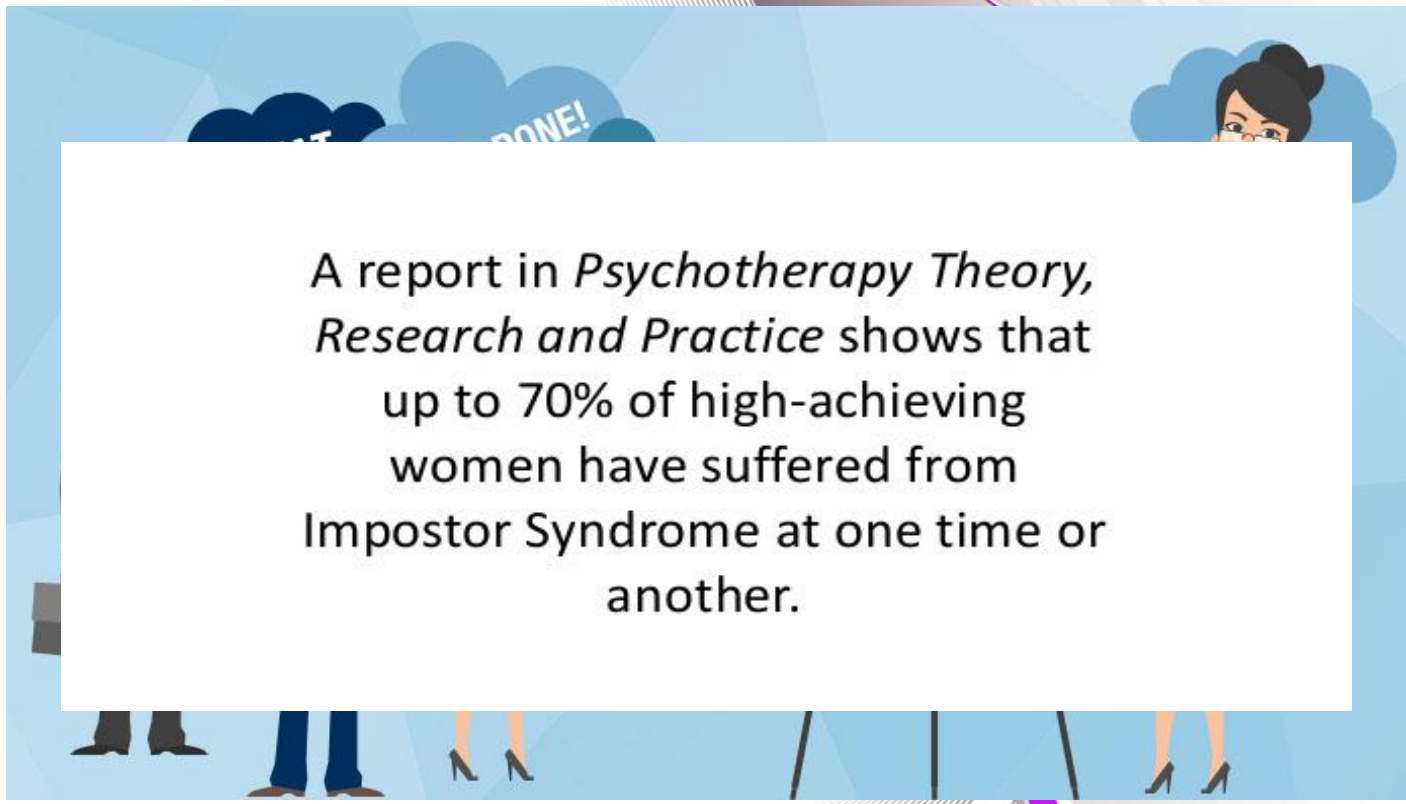
Gender bias contributes to scenarios in which women are evaluated as less competent, less hirable, and less valuable than identically qualified male counterparts



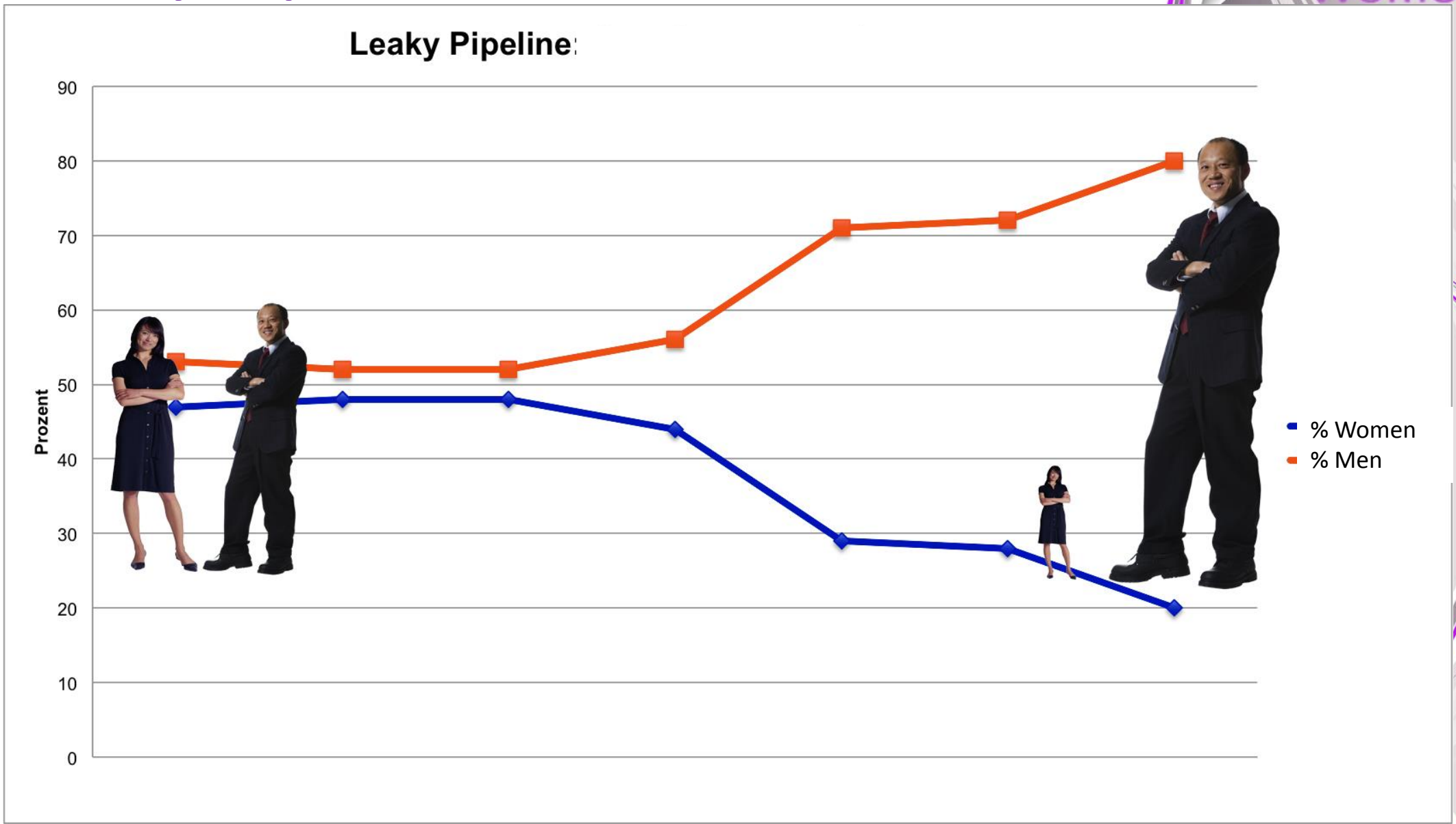
Impostor Syndrome:

"The feeling that your achievements are not real or that you do not deserve praise or success when in fact it is the opposite".

Women experiencing Impostor syndrome may be less willing to put themselves forward, feeling that they are not qualified



Leaky Pipeline



The question is then

What Can We Do To Plug the Leaks?

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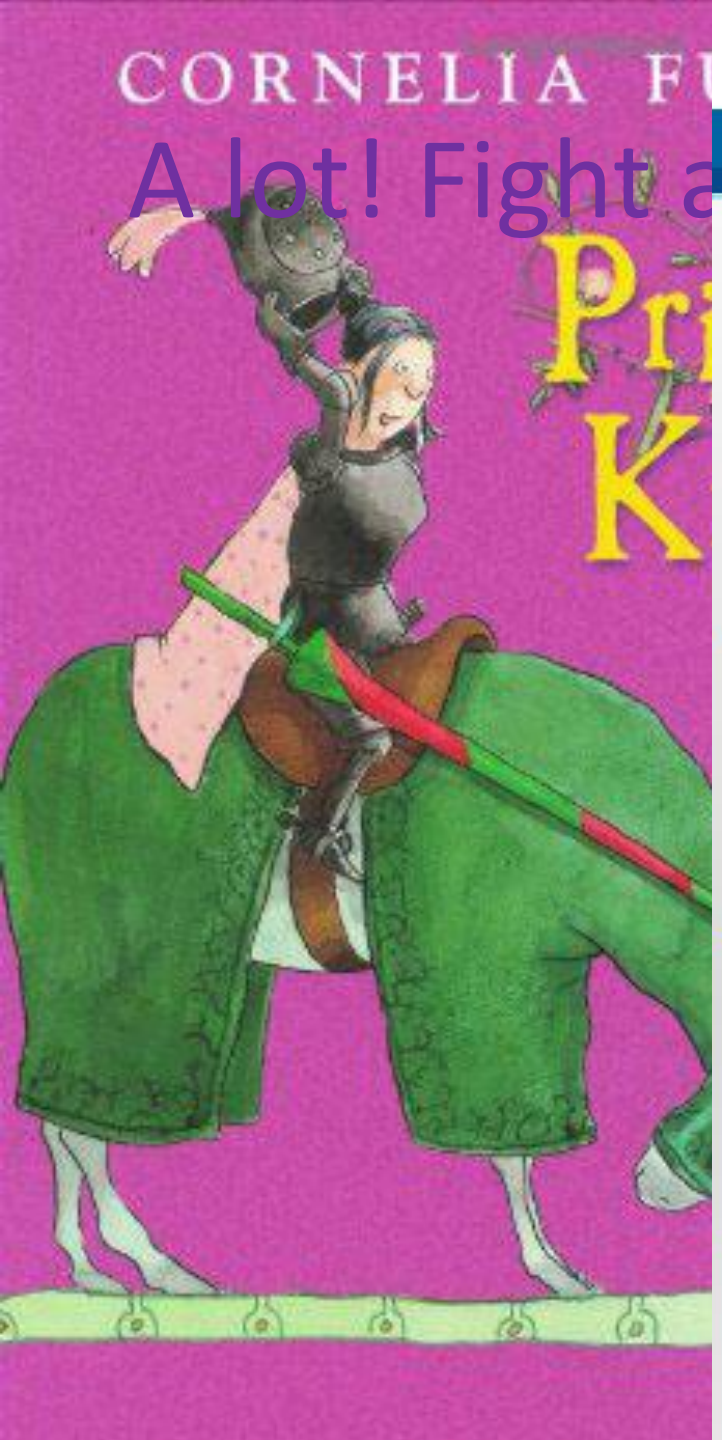

European Commission

RESEARCH & INNOVATION

Science: It's a girl thing!

Profiles of women in science

Marieke Huisman,
Netherlands,
Computer Scientist,
University of Twente

Silke Bühler-Paschen,
Austria,
Physicist,
Vienna University of Technology

Leyre Ortiz García,
Spain,
Pupil,
Alicante European School

Ilaria Capua,
Italy,
Veterinary Virologist,
IZSVe Padova

Estelle Mossou,
France,
Physicist,
Laue-Langevin Institute, Grenoble

Merle Missoweit,
Germany,
Biologist,
Fraunhofer Institute for Technological Trend Analyses Euskirchen

Daniela Wolf,
Austria,
Student in Informatic Didactics,
Vienna University of Technology

Nadia Berloffa,
Italy,
Student in Engineering,
University of Trento

Eline Meul,
Belgium,
Student in Bioengineering,
University of Ghent

Iris Slootheer,
Netherlands,
Student in Applied Physics,
University of Twente

Yael Nazé,
Belgium,
Astrophysicist,
University of Liège

Karin Tonderski,
Sweden,
Environmental Scientist,
Linköping University

Joanna Zmurko,
Poland,
PhD student in virology,
Rega Institute for Medical Research KU Leuven

Janka Mátrai,
Hungary,
Bioengineer,
Joint Research Centre - Geel

Louisa Pereira,
Portugal,
Geneticist,
IPATIMUP, Porto

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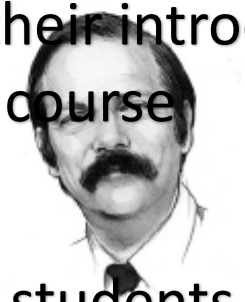
To give visibility to the problem

Female computer science graduates nationally

Female computer science graduates at Harvey Mudd College

editor's letter



Moshe Y. Vardi

bout Gender

ng? A Lot!

Revise their introductory computer science course

Provide students with early research opportunities

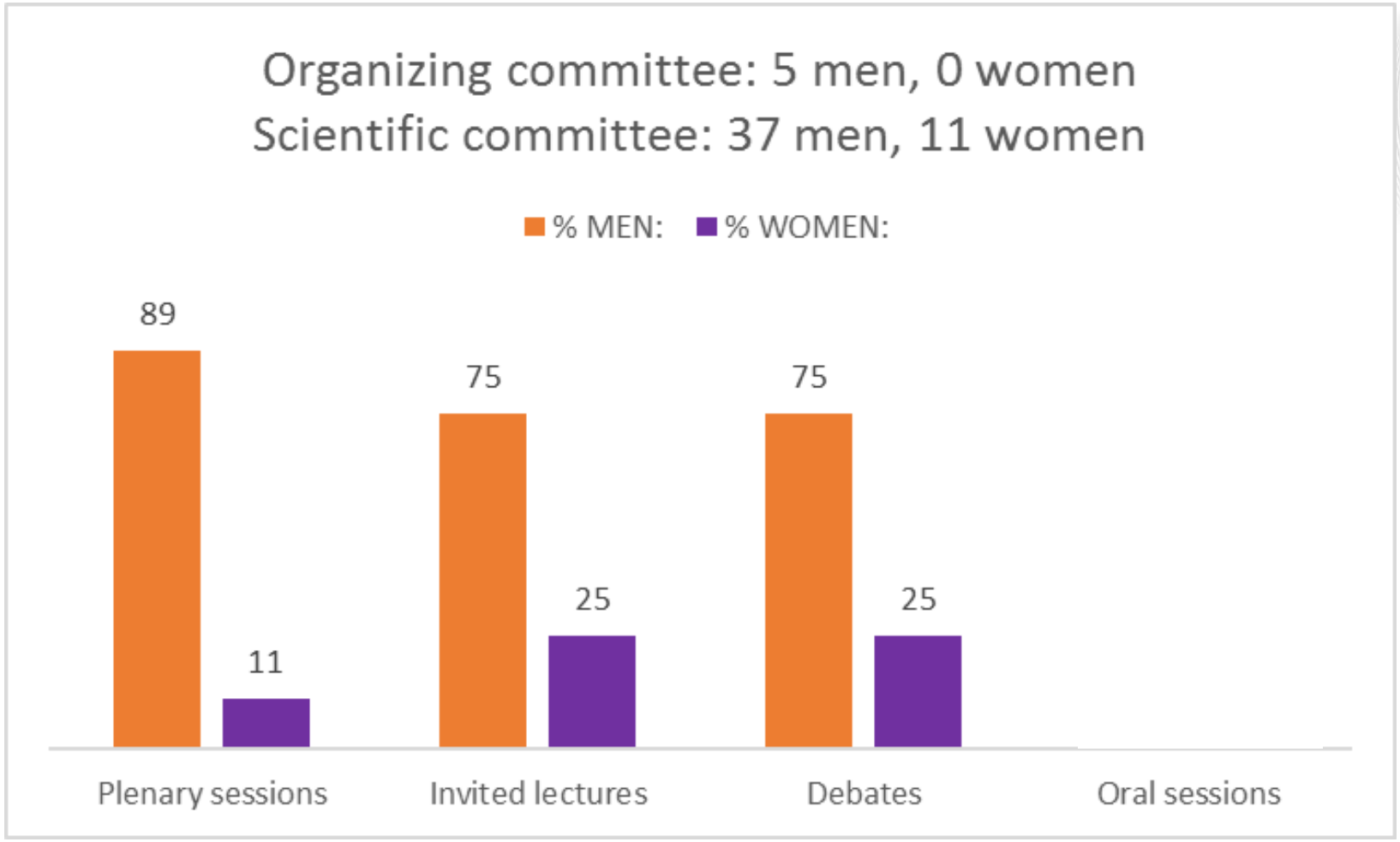
Take female students to the Grace Hopper Celebration of Women in Computing or similar conferences

Gender-blind selection criteria

- Women participation ⬆
- Over the past 30 years:

number of women in the top US orchestras increased fivefold.

To increase women speakers at conferences



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Female conveners at scientific symposia

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The Presence of Female Conveners Correlates with a Higher Proportion of Female Speakers at Scientific Symposia

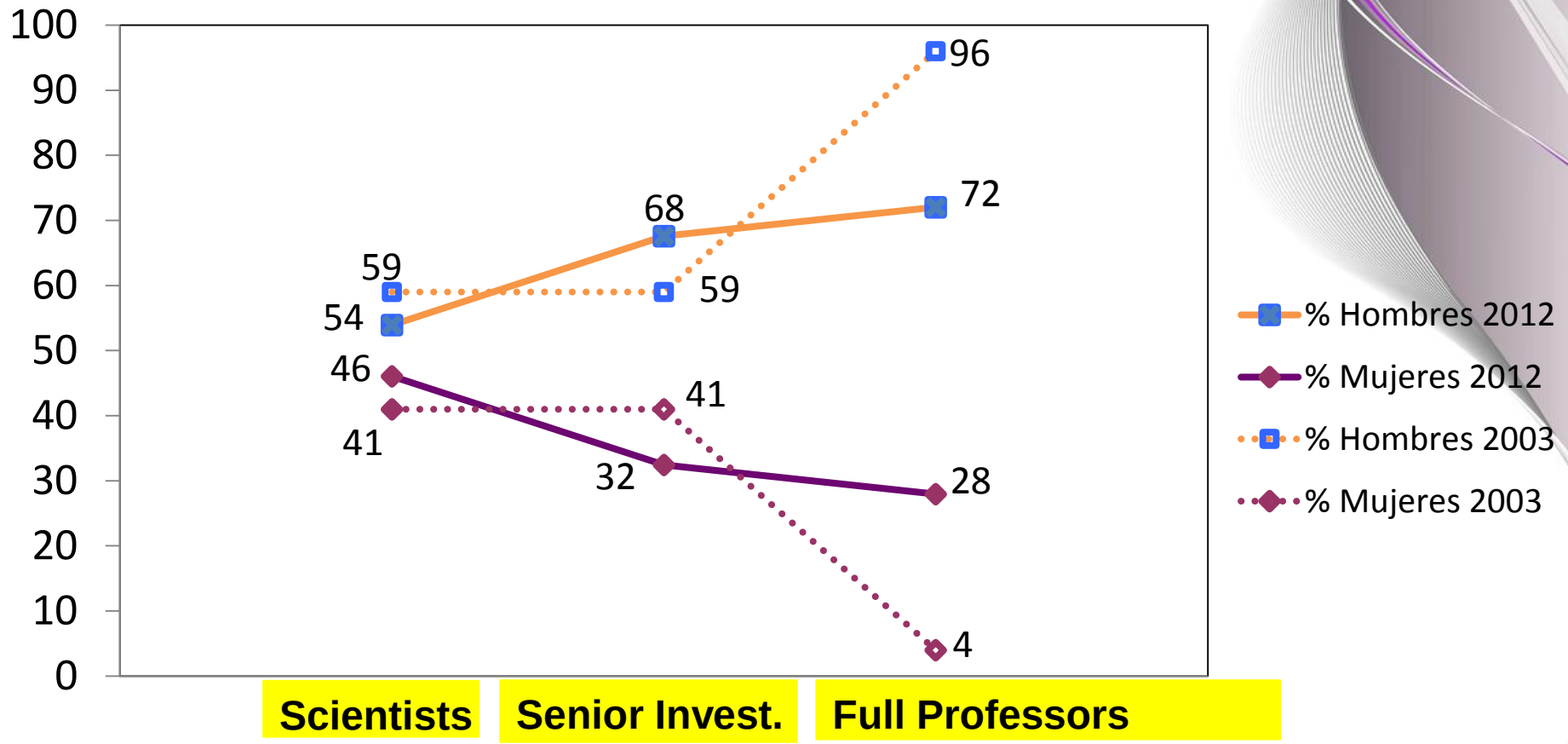
Arturo Casadevall,[a] Jo Handelsman[b]

Departments of Microbiology and Immunology and Medicine (Infectious Diseases) of the Albert Einstein College of Medicine, Bronx, New York, USA[a]; Department of Molecular, Cellular and Developmental Biology, Yale University, New Haven, Connecticut, USA[b]

Analysis of 460 symposia with 1,845 speakers:

At least 1 woman member of the convening team correlated with a significant higher proportion of invited female speakers!

Concrete measures: quotas and gender parity on committees



Spanish Council for Scientific Research

By courtesy of Dr. María Blasco

Many things can be done…Let's go for it!

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THANK YOU!