

物理学における日本人女性の  
活躍の場を求めて  
Promotion for *Japanese*  
woman' s activity in physics



下村 真弥 Maya SHIMOMURA

奈良女子大学 Nara Women' s Univ.

2017/3/21



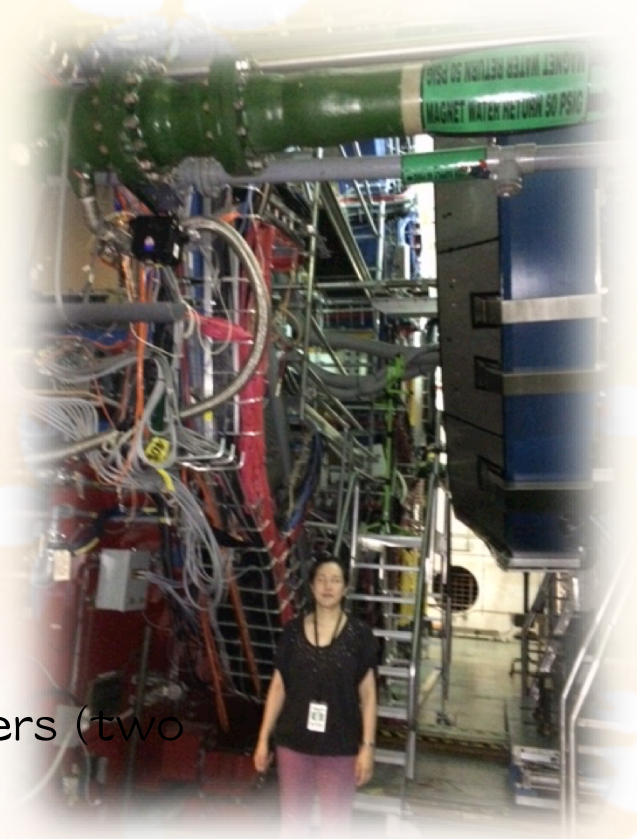
# 概要 Abstract

実験物理屋で大学の教員である講演者が、これまで経験した国内外での研究生活、研究者夫との結婚・出産・子育て・別居生活についてお話しし、そこから学んだことも含めて女性科学者として現状の課題、特にバイアス（思い込み・差別）についてお伝えします。

As a physics experimentalist and University staff, I will talk about my life and experiences of research, marriage with a researcher, growing children, separated. From these points of view, I will discuss about our current issues especially “gender bias(discrimination)” in Japan as a woman scientist.

# Who I am

- Nara Women' s Univ. Assistant professor
- 高エネルギー原子核実験
- Experimentalist
  - Collaborations in America/Europa
  - Bussiness trips /years
- Family: Husband(experimentalist) • two daughters (two and four)
  - Weekend marriage
  - 埼玉と奈良での別居生活・週末婚
- 38 year old who cannot stand overnight work anymore. 徹夜がこたえる、38歳・アラフォー
  - Want to have one more child ?
  - 3人目希望？



2006 約11年前



# Background

男女平等主義の家庭に育つ。

I was raised by parents who think men and women should have equal opportunities .

My mother had a full time job, specialist.

My father had a full time job also, working long time.

Both agree that women and men should be fairly equal.

However, even in my family it was not so true.

House keeping and child care were mostly done by mother.

# Bias at junior high school

13 year old

## (中学校のとき)

- I wanted to be a class leader.
- All official class leaders are boys and girls are so called “sub-” leader in our school.
- I wanted to be a leader (not sub) so I became a candidate and won the election. Only our class leader is female and sub is male.
- One of the popular teachers whom I also like whispered me “I will tell you a good thing” .

# Bias at junior high school

13 year old

## (中学校のとき)



その先生が言うには、

「君は副委員長になるべきだった。男は、繊細なんだから、立ててあげないといけない。女の君が前に出るのではなく、支えてあげるんだ。そうすれば男は単純なんだから、がんばるんだ。」

The teacher said “You are better to be a sub. Men are sensitive, so women should let them take a leading position. Don’ t go first. You should support them. Since men are simple, they work hard!”

He said “Be careful next time.”

次は気をつけるんだよ。

# More and more

- その大学に行ってもいいお嫁さん候補になれないよ、と友達のお母さん。
- “Don’ t enter that university. You cannot be a good wife candidate because one of the professors became famous due to his bad sexual harassments. “ My friend mother said.
- I don’ t want my girlfriend to have higher education than me.

# Going back to my univ. period

- Women' s University. Only women!
- A normal college student.
- I realized I was good at taking leadership.
  - Female students were often expected to write a note while male students do actual experiment in the Lab class at high school.
- I realized these fact after I entered graduate school which has much more men than women.



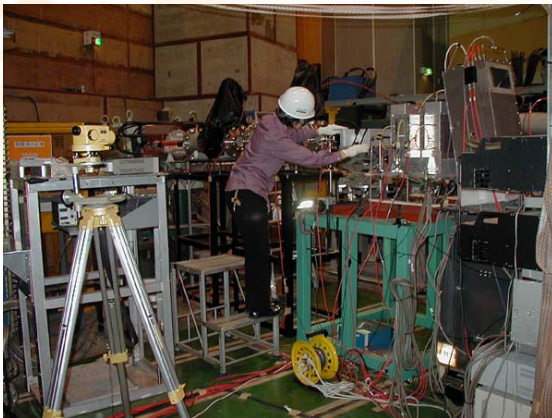


# 居心地は良かったけれど、留学

- 一生仕事はしたい
- Want to work for a lifetime.
- 苦手な英語を克服するためにアメリカへ
- Go to U.S.A. to improve my English skill.
- 自分がバイアスを持っていることに気がついた！
- I realized that I have bias !!
  - ジーンズであぐらをかくのは、はしたない？
  - 女が男に命令してはいけない？
- This experience changed my life.
- 私は差別されていることに気がついていなかった
- I didn't realize I am in the discrimination.

# 大学院へ Graduate school

- 本格的な研究のスタート started research.
  - アメリカでの実験にM1冬から参加。
- 筑波大学高エネルギー原子核実験の研究室
  - いきなり任される仕事。 (優しい奈良女が恋しい)
  - 男子ばかりの環境へ only few wemen
  - 良くも悪くも特別 (奈良女でよかった)



# I was special in good/bad way

- When one of my lab-peer and I went to BNL together, he told me “my girlfriend doesn’ t allow me to take a same airplane with you, so I will change my flight, and I cannot take a shift with you anymore.”
- “Don’ t join in my pictures”
- “Don’ t talk to me here where web camera are on.”
- Sometime too kind. “I found the bugs in your code so I fixed these. 😊”

# 国際実験 international Collaborations

- 検出器作ったり、実験したり、データ解析したり。
- Build detector, experiment, analyze data
- 公用語は英語。English
- 多数の共同実験者。Big collaborations!



# Master/ph. D/post-doctor

- 研究者生活？ Scientist life？

- 日本、アメリカでの検出器作り

- データ解析 data analysis

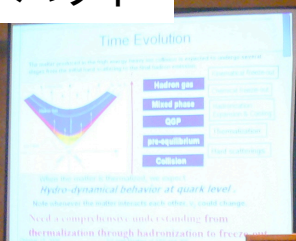
- 国内外の学会での発表 presentations at everywhere

→ 苦しいこともあったけど、かなり楽しかった

- 新しい発見

→ a lot of fun and some tough works though.

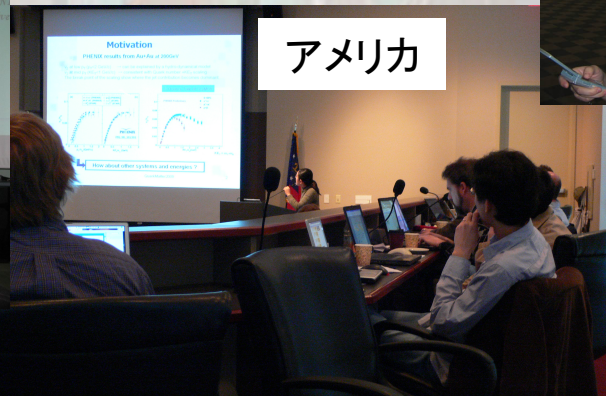
ハワイ



南フランス



アメリカ



北海道



# 出産・子育て(child-birth, child-raising)

## U.S.A. (1<sup>st</sup> child)

- 2 months maternity leave.
- Daycare: expensive
- Parents are expected to have responsibility
  - Father skips meeting because of son's soccer game etc.
- Hospital let father come in the even C-section.
- Supportive for your career

## Japan (2<sup>nd</sup> child)

- Up to 3 year maternity leave
- Daycare: relatively cheap.
- Mother is expected to have responsibility
  - Daycare teacher expected mother and father to do different level care.
- Hospital didn't allow father to come in delivery, baby bathing and C-section.

Japan has better system but I felt U.S.A. is easier for child-raising because father's contribution is large compared with Japan.

# 子育てと仕事(child-raising & work )

- 研究の時間は激減。 Working time decreased drastically.
- 寝かしつけながらミーティング。 Meeting lulling children nightly.
- 出張のたびに「子どもどうしよう！？」 Hesitate what to do for children at every business trip.
  - My husband used all paid holidays.
  - I bring them sometimes.
    - American(BNL) : expensive but possible
    - Europa(CERN) : expensive and hard
    - Japan: expensive and have to hide!
- 研究者という職業の問題 The issue of researcher
  - Can take holidays, Just no career for you.
- 父母は、チームになって協力する。日本ではとても難しい。 Parents have to be a team. It is difficult in Japan.
  - America: My husband is my partner. Can say so In Japan ??

I had discussed many times with my husband.

Don' t give up.

- I can say now “my husband is my partner.”

# 女子大生の心配

Many female students worry about

- 子育てと仕事を両立できるか。 If I can do work and child-raising both.
- 仕事に支障がでないか。子どもを不幸にしないか。 If I can work enough. If I can make my children happy.
- 産休・育休など制度の充実した会社に入れるか。 If I can work for the company which has good systems for working mother.
- 夫が非協力的だったらどうしよう・・・。 What can I do if the future husband is not cooperative ?



# 女子大生の心配

Many female students worry about

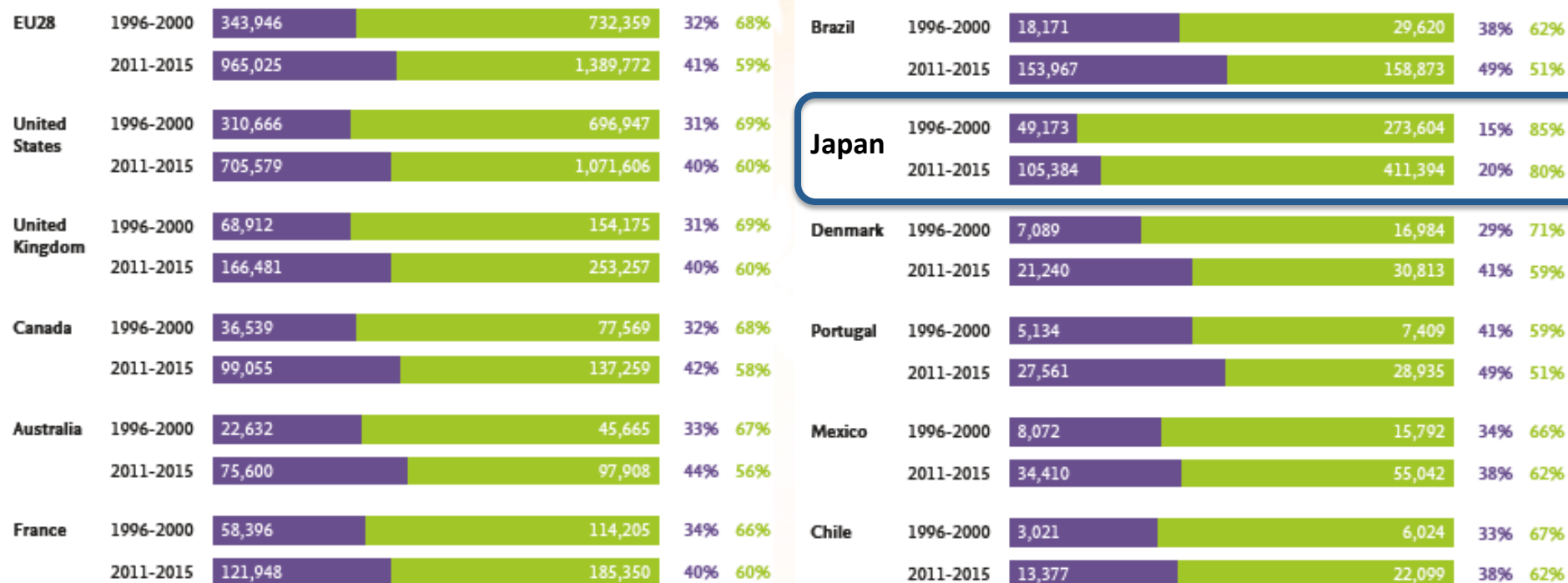
- 子育てと仕事を両立できるか。 If I can do work and child-raising both.
- 仕事に支障がでないか。子どもを不幸にしないか。 If I can work enough. If I can make my children happy.
- 産休・育休など制度の充実した会社に入れるか。 If I can work for the company which has good systems for working mother.
- 夫が非協力的だったらどうしよう・・・。 What can I do if the future husband is not cooperative ?

そういう心配をしている男子学生に出会ったことがない！  
I never meet male students who worry about these!  
WHY only women are under this pressure in Japan?

# Proportion and number of researchers per gender - All fields of Science

■ Women ■ Men

PROPORTION OF WOMEN AND MEN  
(AMONG NAMED GENDERED AUTHOR PROFILES)

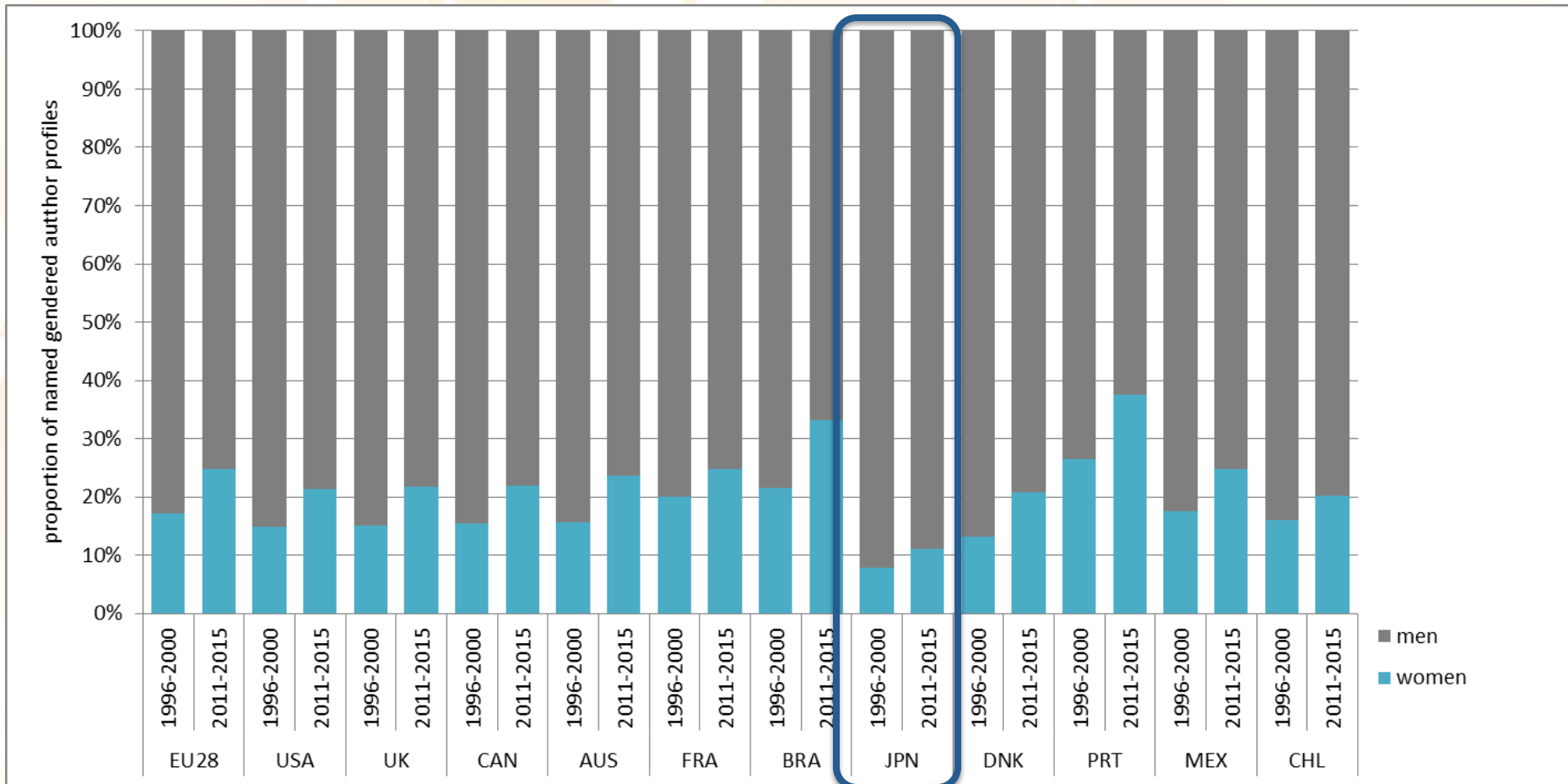


*The proportion of women among researchers and inventors is increasing in all twelve comparator countries and regions over time. In Japan it went from 15 % to 20 %*

Maya SHIMOMURA

# Proportion of women and men in Physics and Astronomy among named author profiles per period

- In 11 of 12 regions studied, women in physics & astronomy now exceeds 20 %
- Japan has increased from 8 % 1996-2000 to now being 12% in 2011-2015



## International mobility (all fields of science)

### UK 31 % Women

Non-migratory 29% of which 31% women  
28% inflow women  
26% outflow women  
*(women researchers less mobile)*

### Japan 16 % Women

Non-migratory 61% of which 16% women  
11% inflow women  
19% outflow women  
*(only country with higher % women leaving)*

日本は、出て行く女性研究者が入ってくる女性研究者より多い唯一の国。

今後、日本の女性科学者を増やすにはどうしたらいいのか？

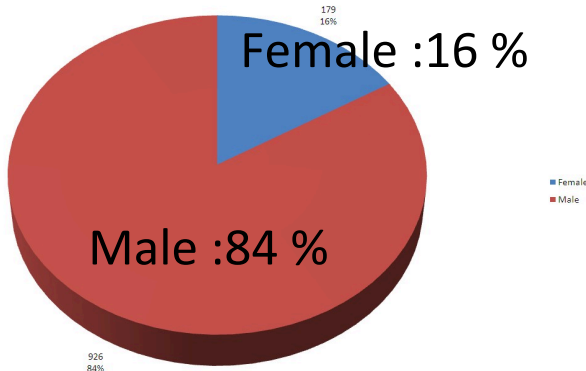
次世代の女性のためにこの生きにくさを少しでも解消したい。

I want to decrease the difficulty for women in Japan for next generation.

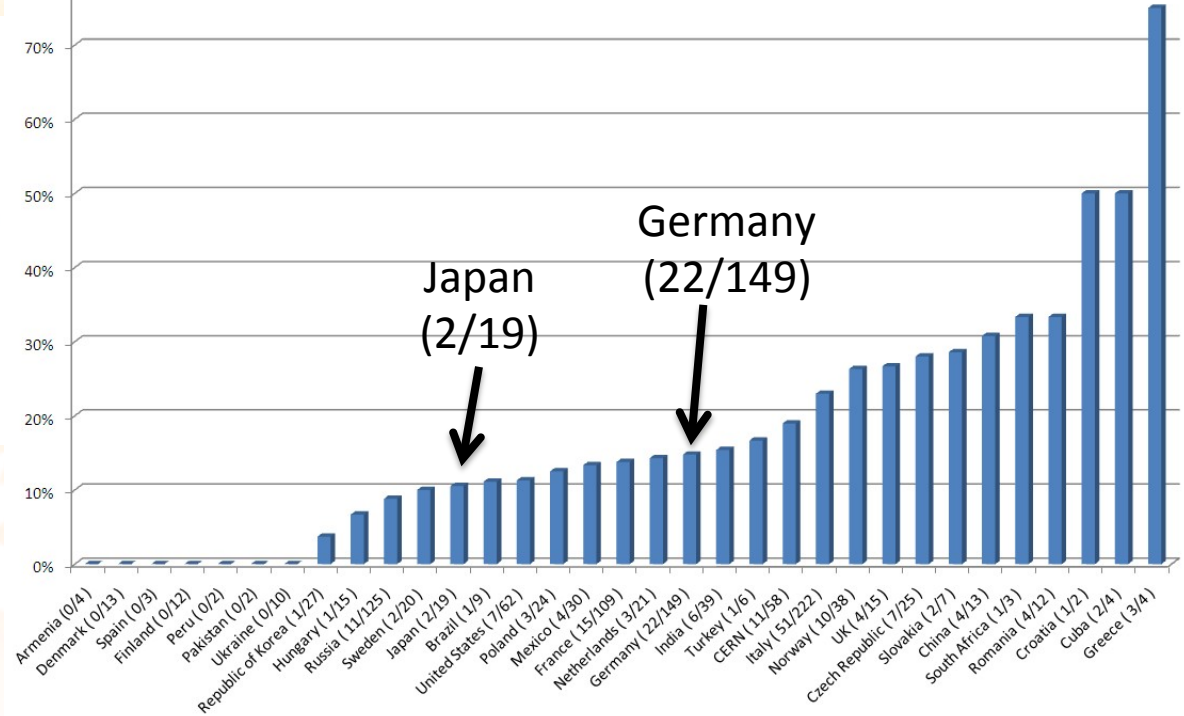
# 実験グループ内での比率

<http://alicematters.web.cern.ch/?q=women-alice-statistics>

ALICE



Year 2011

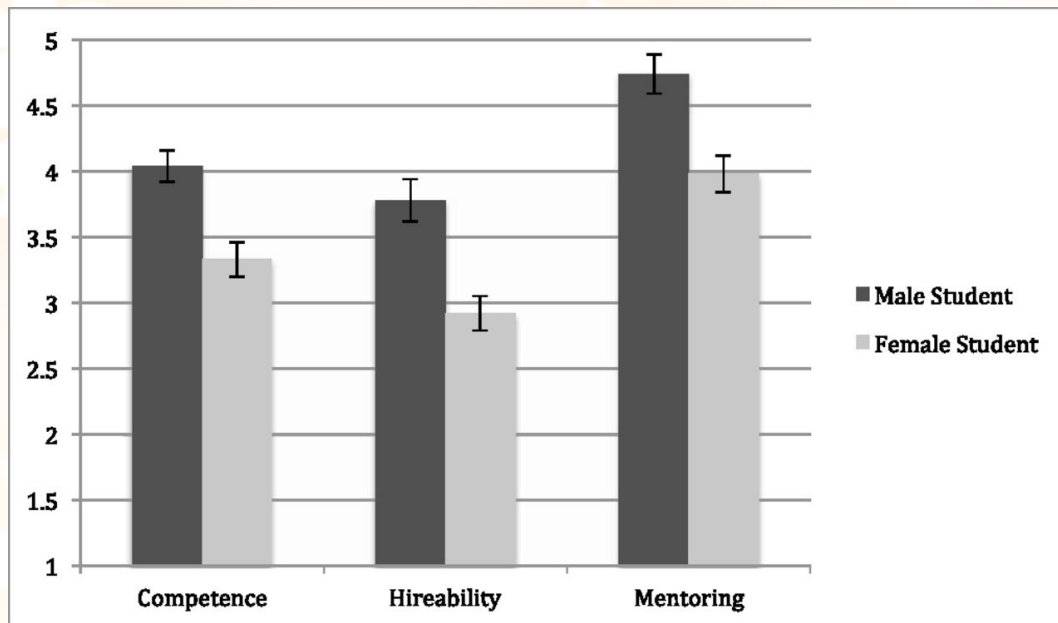


- 2017 日本の高エネルギー原子核実験では、教員・ポストドクは、男性 21 女性 1 (←私)
- 2017 In Japanese High energy nuclear experiment, the number of staff and post-doc is Male 21 and Female 1. (← Me)
- 女性は男性より物理が苦手??
- Japanese women are worse at physics than Japanese men ?

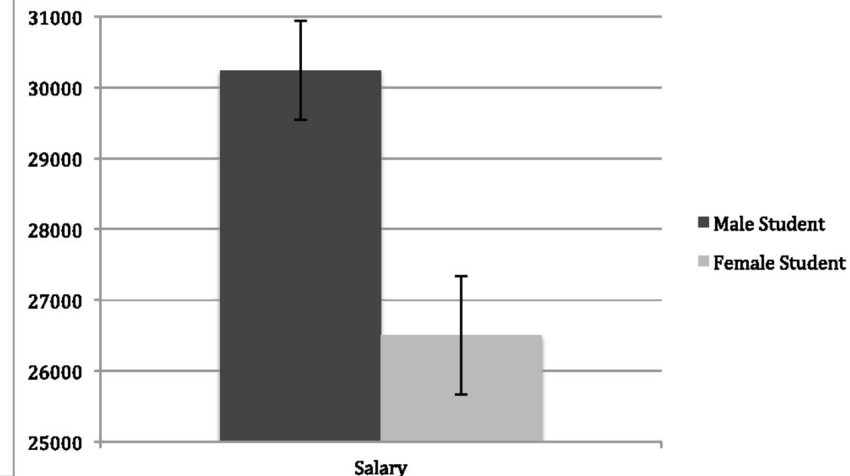
# Unconscious biases(無意識での偏見)

- Biology, chemistry and physics professors (n=127) received the same application for a “lab manager” position, randomly assigned a male or female name
  - Asked to judge competency, potential salary, willingness to mentor
- Scientists have the same biases as other groups.

科学者ですら、バイアスをもっていた。男性の名前の方が評価が高い。  
Both male and female professors give male students better evaluation than female students.



年収約 40万円差 (1ドル = 100円) !



Corinne A. Moss-Racusin et al. PNAS 2012;109:16474-16479

# 意識下 & 無意識下のバイアス

## Conscious and unconscious biases

- Are you confident about not having these biases ?
- We, Educationists/Scientist, should avoid these biases.  
→ It' s not so easy.
- Need to think if there is a logic.
- 女性が家事育児をするべきというバイアス
- 女性が理数系が苦手だというバイアス

# 最後に at the end

- 現代の女性は、敵だらけ？ There are many enemies around woman ?
  - There are many supporters too.
- 常識にとらわれない。 Not driven by common sense.
  - Is there clear logic ?
- 追い詰められると結構いいアイデアが出たりする。 You would have a good idea when you are in tough situation.
- 研究者は楽しい Being a scientist is fun.
  - 自由に研究できる You can research freely.