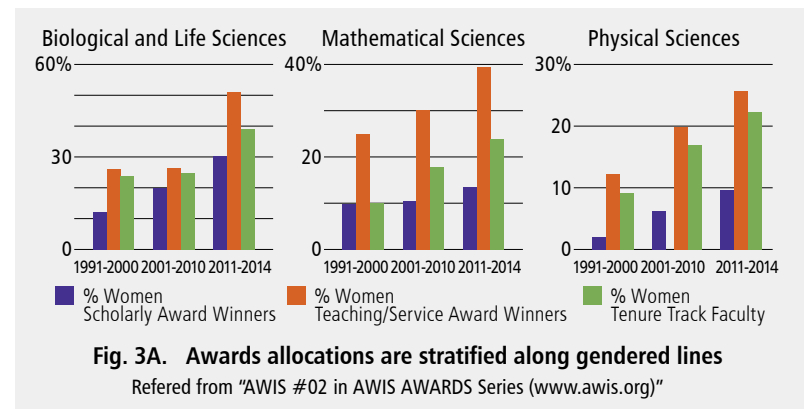


## 7. Awards Inequity in Scientific Societies

Awards are important indicators of career success and are key in recruitment, hiring, promotion, recognition, and tenure decisions. Since 2010, AWIS (Association for Women in Science) has partnered with eighteen STEM disciplinary societies to research patterns in awards allocations, focusing on the influence of unconscious bias in the selection procedures aimed at fostering gender equity in awards. The results indicated that "Awards allocations are stratified along gendered lines: Women were consistently under-represented among recipients of scholarly and research awards and overrepresented among recipients of teaching and service awards relative to their proportion among PhD., full professors and disciplinary society membership" (Fig.3A). The results indicated that unconscious biases based on social stereotypes influenced the under- recognition of women for research and over-recognition of women for services, teaching and mentoring

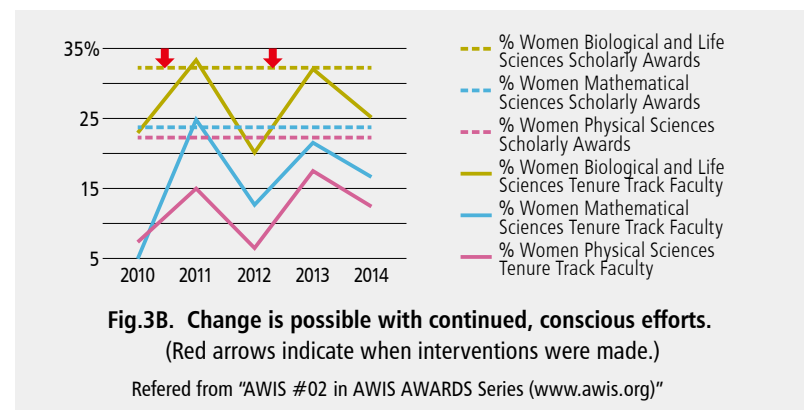
AWIS #02 in AWIS AWARDS Series ([www.awis.org](http://www.awis.org))



## 8. Change Requires Continued Effort

Change is possible with continued, conscious efforts. Following critically reflective meetings with AWIS in 2010 and 2012, many societies implemented substantial changes in their selection procedures that allowed for improvements leading towards equity in making awards. However, awards cycles over time reveal that without repeated and intentional efforts, it becomes easy to slip back into problematic and unconscious patterns. Repeated and intentional efforts are necessary for sustainable and equitable change to be realized.

AWIS #02 in AWIS AWARDS Series ([www.awis.org](http://www.awis.org))



## Unconscious Bias is most extreme when...

- Individuals are tired, rushed or cognitively burdened,
- Individual demographic traits are rare in a group making decisions and/or a group being evaluated
- Valid quantitative performance information is lacking
- Evaluation criteria are vague or ambiguous

## Implicit Association Test (IAT)

In the last 20 years, there have been a number of efforts to develop measures that reflect "Implicit Bias/Unconscious Bias". Implicit Association Test (IAT) is an example. IAT measures implicit attitudes that one is not aware of. For example, one may believe that women and men should be treated equally in leadership positions, but people's automatic response associates leadership positions with men more often than with women. There are various types of bias associated with gender, race, age, religion and even weight.

An example of IAT can be found at:

Harvard's "Project Implicit": Dasgupta and Asgari (2004).  
<https://implicit.harvard.edu/>

## Tools to Interrupt Unconscious Biases

There are many on-line tools designed to interrupt unconscious biases. Below are examples of tools offered by the United States universities. They were developed under the United States National Science Foundation's ADVANCE program (<https://www.nsf.gov/ehf/Materials/ADVANCEBrochure.pdf>).

### ● University of Wisconsin-Madison

Women in Science & Engineering Leadership Institute, University of Wisconsin-Madison (<http://wiseli.engr.wisc.edu/>)

### ● University of California, Berkeley

Tools for Change, University of California (<http://www.toolsforchangeinstem.org/>)

### ● University of Washington, Seattle

Interrupting Bias in the Faculty Search Process, University of Washington (<http://www.engr.washington.edu/lead/biasfilm/>)

### ● Stanford University

Center for the Advancement of Women's Leadership – Tools (<https://womensleadership.stanford.edu/tools>)

## Closing Remarks

As unconscious bias resides outside of awareness, it is not possible to completely eliminate it, but, we can minimize its negative impacts by recognizing that we all have unconscious bias, understanding how our biases can manifest, and avoiding situations where unconscious bias can become extreme. We hope this leaflet will be helpful and valuable in creating the inclusive environments where both men and women can realize their full potential without encountering barriers and biases.

## Acknowledgement

This leaflet is prepared by Dr. Hisako Ohtsubo, Nihon University, for the EPMEWSE based on the Japanese leaflet ([http://djrenrakukai.org/doc\\_pdf/2017/UnconsciousBias\\_leaflet.pdf](http://djrenrakukai.org/doc_pdf/2017/UnconsciousBias_leaflet.pdf)) published in August 2017.

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# Understanding Unconscious Bias

January 2018

EPMEWSE (RENRAKUKAI)

The Japan Inter-Society Liaison Association Committee for Promoting  
Equal Participation of Men and Women in Science and Engineering  
Japan

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# 1 Introduction

Unconscious bias, also called implicit bias, is a form of stereotyping that is often unintentional, automatic, and outside our awareness. All of us, both men and women, are influenced by our experiences and make judgments without being explicitly aware of how our decisions are impacted by our unconscious. Unconscious bias links social groups with characteristics, such as gender, race, and religion, which generate relative disadvantages for especially underrepresented groups, such as women in STEM (Science, Technology, Engineering and Mathematics). As unconscious bias resides outside of awareness, it is not possible to completely eliminate it, but it is possible to minimize its negative impact by recognizing that we all have it and by understanding how it works.

## Unconscious Bias is a Relatively New Concept.

Unconscious Bias is an idea that began to be widely recognized for its impact on decision making around the year 2000.

### • Daniel Kahneman

Daniel Kahneman is an American psychologist, well known for his work on the psychology of judgment and decision-making, as well as in behavioral economics, for which he was awarded the Nobel Prize in Economic Sciences in 2002. The concept of unconscious bias appeared for the first time in his book\* (\*Heuristics and Biases: The psychology of Intuitive Judgment. Cambridge University Press).

In his more recent book, "Thinking Fast and Slow" (2011), he describes two different ways that the brain forms thoughts: "System 1" is fast, automatic, stereotypic and emotional; "System 2" is slower, more effortful, more logical, and conscious. The book delineates cognitive biases associated with each type of thinking, from framing choices to people's tendency to substitute a difficult question for one that is easy-to-answer, which often leads to an error in judgment.

### • Virginia Valian

Virginia Valian is Distinguished Professor of Psychology at Hunter College. Her book, "Why So Slow?" was a breakthrough, having significant impacts on the women's movement in early 2000's. According to her, both men and women have unconscious biases about gender schemas, resulting in small differences in characteristics, behaviors, and evaluations of men and women, which accumulate to generate disparities between them.

"Valian's goal is to make the invisible factors that retard women's progress visible, so that fair treatment of men and women will be possible." (MIT Press, 1999)

### • Nancy Hopkins

Nancy Hopkins, Professor Emeritus at MIT, is known for her work in establishing the zebra fish as an experimental model system and identifying genes required for its development. She is also well known for her effort to identify unequal treatment of female faculty at MIT. She and her colleagues collected data and presented the evidence of inequity to the MIT president, who acknowledged and corrected the inequities among the faculty members at MIT. In her 2014 Boston University Graduation Speech, she stated, "If you asked me to name the greatest discoveries of the past 50 years, alongside things like the Internet and the Higgs particle, I would include the discovery of unconscious bias" (May 18, 2014).

## Unconscious Bias Schema

### 1. Stereotype Threat

Stereotype Threat results when an individual absorbs a widely held and fixed concept that is an oversimplified image of how members of a particular type or group act. For example, preconception such as girls are naturally lacking in ability in mathematics gets imbedded in the brain early in life, leading to girls not choosing science for their field of study or occupation. Moreover, members of negatively stereotyped groups may actually underperform, relative to their own ability, if they are reminded that they are members of the stereotyped group. Thus, the existence of these stereotypes not only impact how others judge women and members of other under-represented groups but also how they judge themselves leading to barriers against the full participation of women and members of other under-represented groups in the workplace.

## 2. Privilege

Privilege is a systemic form of advantage. The privileged take it for granted that they deserve to get a more positive evaluation, therefore, it is strongly linked to bias. It is invisible and affects everyone, by often categorizing people into the group based on a certain attribute (gender, occupation, educational background, race and so on) and assuming that every member of that group is equally qualified or able. People tend to treat favorably those who belong to the same group as themselves, and to be suspicious of those who do not. A typical example is a so-called "Old Boys' Network" where it is hard for women to break into.

### 3. Micro-aggression, Subtle in Action, but Persistent

Micro-aggression comprises attitudes that are subtle, but persistent. It includes everyday acts of exclusion that denigrate the capabilities of underrepresented groups. Micro-aggression includes behaviors such as interruption, translation, misidentification (call by the wrong name, or have one's name repeatedly mispronounced), exclusion, and marginalization.

## Unconscious Bias in Action

The following examples highlight evidence of unconscious bias in action. All reports are based on research in the field of social sciences, cognitive sciences, behavioral sciences, and increasingly neurosciences.

### 1. Orchestrating Impartiality

This research analyzed whether gender biases could help account for the significant underrepresentation of women in the United States orchestras, where women's ratio was around 5-10% in the 1970's and 1980's despite the fact that women comprised of about 45% of the top United States music school graduates. Some orchestras began experimenting with a "blind" audition. Musicians were hidden behind a screen and judges could not see the gender of the musician. The rate at which female musicians passed the initial audition increased almost immediately.

Most major United States orchestras had changed their hiring policies by 2000. Openings became widely advertised in the union papers, and many positions attracted more than 100 applicants where fewer than 20 would have been considered before. At present, ratio of women players reached 25%-46% in the top United States orchestras

C. Goldin and C. Rouse. (2000) *American Economic Review* 90, 715-741

### 2. Emily and Greg are More Hirable than Lakisha and Jamal!

This is a famous field research experiment designed to survey the differential treatment based on race still seen in the United States labor market. In order to manipulate perceived race, researchers prepared identical resumes with randomly assigned African-American names (such as Lakisha Washington or Jamal Jones) or Caucasian-sounding names (like Emily Walsh or Greg Baker). The results showed that applicants assigned Caucasian names could expect on average one callback for every ten advertisements applied to. On the other hand, those assigned African-American names would need to apply to about 15 different advertisements to achieve the same result. Caucasian names receive 50 percent more callbacks for interviews. This was a typical bias indicating that employers judged the applicant as unfavorable simply based on the names which they perceived as having a disadvantaged background.

M. Bertrand and S. Mullainathan (2004) University of Chicago Graduate School of Business, NBER and CEPRMIT and NBER

### 3. Motherhood Penalty?

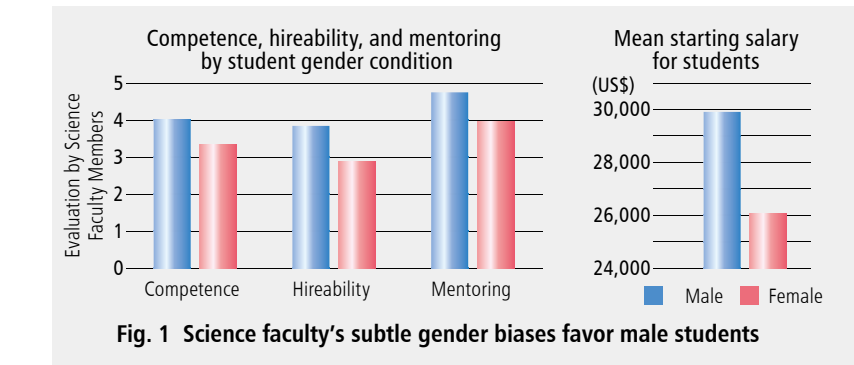
Examiners reviewed information four candidates for the position of Associate VP of Financial Affairs. All had MBAs, were in their mid-30s, and had been performing equally well. Applicants were a male parent, a female parent, a male non-parent and a female non-parent. Circling a "Children" or "No children" response to a question indicated parental status. Screening recommendation demonstrated that a father was considered to be more able than a mother, and his starting salary was higher. The woman without children tends to get a higher rating than a father or a man without children, and was twice more likely to be recommended for hire than the mother. It is evident that unconscious bias against a mother, not a woman, played a role in the evaluation process. No difference was seen in the evaluation result by the gender of the rater.

S. J. Correll, et al. (2007). *Am J. Sociology*, 112, 1297-1339.

## 4. Science Faculty's Gender Biases Favor Male Students

CVs for a Lab Manager application were studied. The science faculty reviewed the same CVs with different names (genders). They rated "male" applicants as more competent, hireable, deserving of mentorship, and worth higher salaries than the identically credentialed "female" applicants, whom they found more likable. This pattern held for both male and female reviewers.

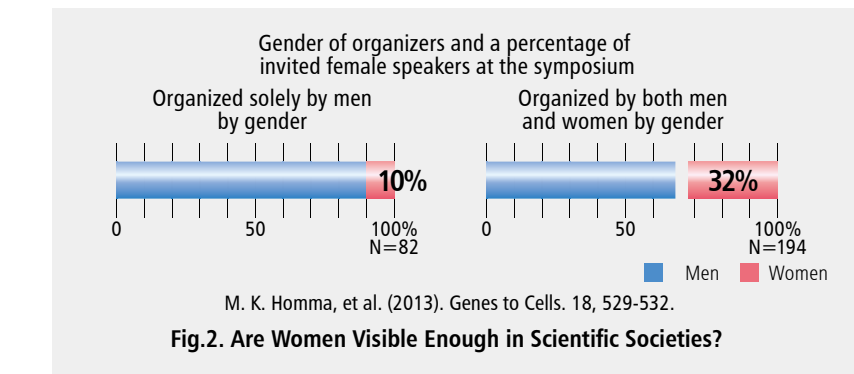
C.A. Moss-Racusin et al. (2012) *PNAS*, 109, 16474-16479



## 5. Are Women Visible Enough in Scientific Societies?

Unconscious bias is present in the selection of speakers at the annual meetings of the Molecular Biology Society of Japan (FY2008, 2009 and 2010). This society is one of the largest among life science related societies in Japan. Female ratio of the members is about 30%. This survey shows how gender of organizers affected the percentage of invited female speakers at the annual meetings over the three-year period from 2008 to 2010. The percentage of the female speakers invited to symposia organized solely by men was much smaller than those organized by both men and women. Female ratio of the speakers in the symposia organized by all-male committees were only 10%, whereas the ratio jumped up to 32% with the presence of just one female committee member. Unconscious bias on the part of male scientists could be present when evaluating their female colleagues.

M. K. Homma, et al. (2013). *Genes to Cells*. 18, 529-532.



## 6. Academic Recommendation Letter

This study found differences in letters of recommendation written for female and male candidates for academic medical faculty positions. Letters written for women were more likely to refer to their compassion, teaching, and effort as opposed to their achievements, research, and abilities, which are the characteristics significantly stressed for male applicants. The traits stressed for the women are based on cultural female stereotypes, and are less valued for success in academic medicine.

F. Trix and C. Psenka (2003). *Discourse & Society* 12:191-220