



TOHOKU
UNIVERSITY

Strengthening Research Capacity Founded Upon Diversity

Overcoming the institutional obstacles
of unconscious bias

Conscious Bias

Unconscious Bias

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Introduction

Tohoku University is founded on the policies of “research first” and “open doors,” and has reinforced its research capacity by embracing diversity. As a result of improving employment standards throughout the university, the percentage of its female faculty members (including assistant professors and research associates) rose from 4.6% to 16.9% in the period between 1992 and 2020.

Compared to many parts of the world however, Japan still has a long way to go. The actual number of female academics in leading positions – professors and associate professors – remains low, and few are sufficiently active or promoted, especially in natural science fields.

Recent studies in the social sciences have shone a spotlight on the existence of “unconscious bias.” The studies suggest that people develop unconscious biases based on their past experiences and background. Although everyone has biases, unconscious biases occur without the person’s awareness and tend to be aimed at minority groups. In work places, the low ratio of females in leadership positions and other forms of gender gaps in some societies are often attributed to an unconscious bias against females.

For Tohoku University to meet its goal of being a globally competitive institution in all fields of academic research, as outlined in its Vision 2030, it plans to leverage all available resources, especially talented researchers who bring diverse voices and perspectives. It is important that all faculty members, students and researchers understand the various types of unconscious bias, in order to minimize its adverse impact.

1 History of Participation of Females at Tohoku University

As shown in Figure 1, the percentage of female faculty members (including assistant professors and research associates) at Tohoku University has been rising steadily, reaching 16.9% in academic year 2020. Furthermore, there’s also been an increase in the number of female executives, including the addition of two new female vice presidents, bringing the percentage up to 26.7%. The number of female professors and associate professors rose from 136 to 176 in 2020, which stands at 10.6%.

The upward trend can also be seen in the student body. The proportion of female undergraduate, master and doctor students rose to 26.4%, 26.2% and 30.7% respectively in 2020. In comparison, the figures were 10.9%, 6.1% and 4.5% in 1991. These numbers reflect the effectiveness of the university’s open campus activities and other outreach efforts, to encourage female high school students to go into science and technology fields.

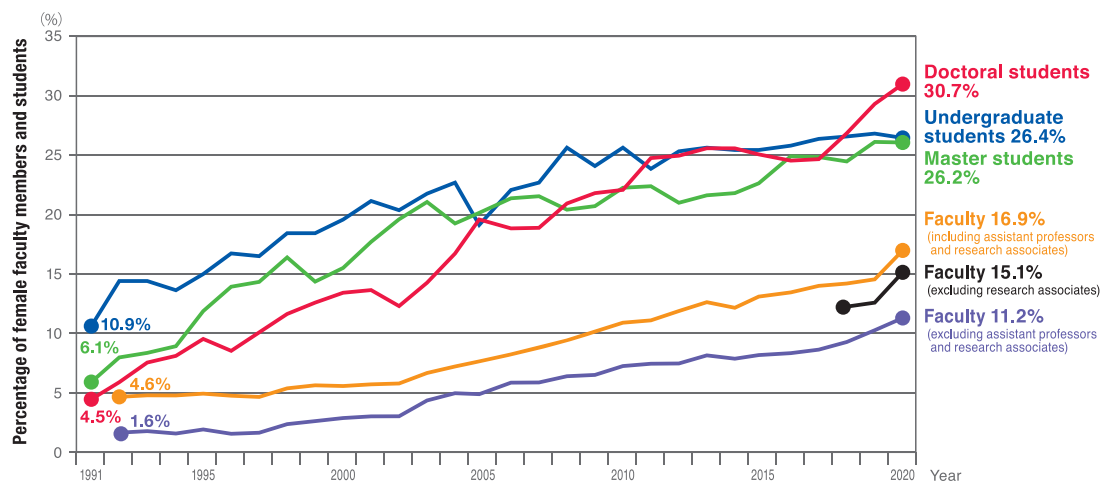


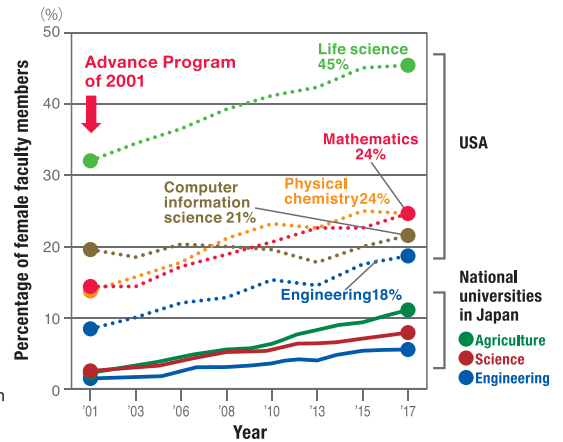
Figure 1. Percentage of female faculty members and students at Tohoku University (as of May 1, 2020)
<http://tumug.tohoku.ac.jp/blog/2020/06/19/18147/>



4 Relation between Diversity and Unconscious Bias

Since the 1980s, the National Science Foundation (NSF) in the US has pioneered efforts to support female academics, shifting its focus from aiding individuals to reforming organizations, as it found the latter to be more effective. As a result, the NSF launched its ADVANCE program (Organizational Change for Gender Equity in STEM Academic Professions) in order to promote the understanding of unconscious bias – especially towards females - and ways to overcome it. Since the launch of ADVANCE in 2001, female faculty members in different academic fields at US universities has been steadily increasing. However, in Japan, where unconscious bias has been largely unaddressed, the percentage of sectoral female faculty members at Japanese universities in 2020 remains lower than the percentage in the US in 2001 (see Figure 4).

Figure 4. Female faculty members ratio in STEM fields: the US and Japan in comparison
Source: [2] SEE BIAS and BLOCK BIAS Part I: p. 5, "Female faculty members ratio in STEM fields: the US and Japan in comparison". (Modified under permission of author)



5 What is “Unconscious Bias”?

Bias is a prejudice in favor of, or against, something or someone, usually in a way that is considered unfair. Unconscious bias – also known as implicit bias - is when a person displays such prejudice or makes an unsupported judgement without being aware of it.

Unconscious biases are social stereotypes that tend to be informed by a person’s experiences, education or background. Individuals or groups that are often unfairly impacted by unconscious bias include those characterized by gender, age, nationality or ethnicity. In academia, unconscious bias can also exist among people from different fields, such as humanities or science, and could cause them to make decisions that are harmful to others as well as to themselves and their careers.

5.1. Cases of Unconscious Bias

Case 1: Female musicians and blind auditions (USA)

In the US in the 1970s, females made up 45% of graduates from music schools such as Julliard. But in many orchestras, only about 5% of the musicians were females. To address this discrepancy, orchestras began recruiting members through open calls instead of recommendations. And blind auditions were used to evaluate candidates, who performed behind a curtain so that their gender was concealed. Evaluators were able to listen to the candidates without visual distractions or bias (see Figure 5 [3]).

The results were noticeable, as more females started getting selected once the possibility of unconscious gender bias was removed. By the year 2000, top orchestras in the US comprised up to 46% female musicians, a significant rise from 5% three decades before. [4]

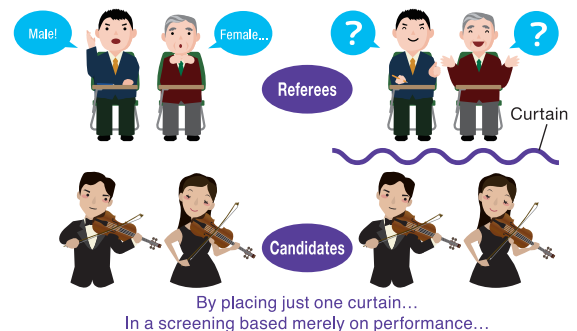


Figure 5. Blind auditions (USA)

Source: Kido, M., 2018, "Eliminate Discrimination Against Females in Entrance Examination for Universities, 'A curtain might be effective'"; p. 2. (Modified under permission of author)
Source Dr. Kido referred to: Bohnet, I., translated by Ikemura, Chiaki, 2018, WORK DESIGN: Gender Equality by Design, NTT Publishing Co., Ltd.
[3] Goldin, C. & Rouse, C., 2000, "Orchestrating Impartiality: The Impact of 'Blind' Auditions on Female Musicians", American Economic Review, 90 (4) : 715-741.
[4] Tsay, C.-J., 2013, "Sight over sound in the judgment of music performance", Proceedings of the National Academy of Sciences, 110 (36) : 14580-14585.

Case 2: Awards Inequity in Scientific Societies (USA)

There is also a notable difference when evaluating the achievements of female academics. Figure 6 highlights the ratio of female academic award winners in the fields of biology and life sciences, mathematics and physics, in three distinct periods between 1991 and 2014. The blue bars represent academic awards, the orange bars represent awards in education and social contributions, and the green bars show the percentage of full-time female faculty members.

In any field and timeframe, the percentage of female academic award winners is lower than the female faculty members ratio, while the share of female academics receiving awards in education and services is higher than the actual ratio of researchers. This shows a bias that males contribute more to academic research, while females tend to be evaluated in education and social contribution.

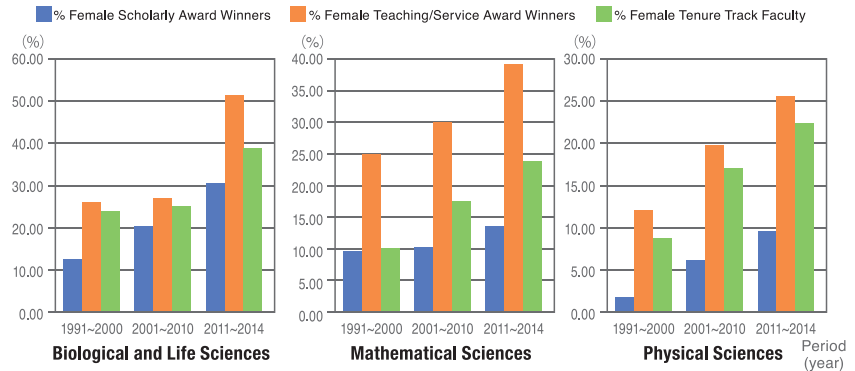


Figure 6. Awards allocations are stratified along gendered lines (USA)

Source: [2] SEE BIAS and BLOCK BIAS Part I: p. 22, "Awards allocations are stratified along gendered lines (USA)". (Modified under permission of author)

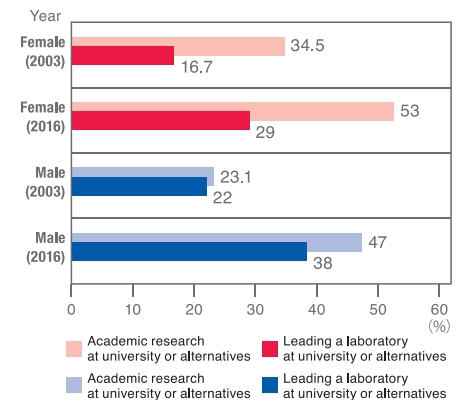
Case 3: Inherent bias female academics confront

Female academics are also capable of unconscious bias against themselves and other females. Figure 7 shows the answers from academics to the question "which profession do you prefer for yourself in the future?" asked in 2003 and 2016 in an extensive questionnaire by the Japan Inter-Society Liaison Association Committee for Promoting Equal Participation of Men and Women in Science and Engineering (EPMEWSE), an association of over 100 academic societies in STEM fields.

The results showed a wide gap between those who "wish to be a researcher" and those who "wish to lead a laboratory," suggesting that female academics are more hesitant than their male counterparts to pursue independence in their career. This could be attributed to female's inherent dilemma between conforming to society's image of femininity and the image of "a leader in an organization." To nurture more female leaders, it is necessary to encourage female to change their perception of gender roles and not give in to stereotypes.

Figure 7. Inherent bias female academics confront

Source: [5] SEE BIAS and BLOCK BIAS Part II: p. 15, "Inherent bias female academics themselves confront". (Modified under permission of author) The 2003 data is based on single-answer question. The 2016 data is based on multiple answer question. (Referred to create the figure)



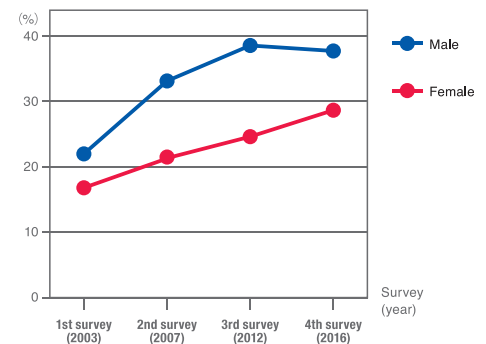
Case 4: Increasing ratio of female academics with leadership orientation

The number of female academics wanting to lead a laboratory is increasing, in line with more females in general aspiring to be leaders. Figure 8 shows the answers by sex to the question "do you wish to lead a research team in your university's laboratory?"

Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) and its programs to promote research activities of female researchers are thought to be behind this change in perception and attitude. Since 2006, Tohoku University has adopted by several MEXT programs, as the Tohoku Women's Hurdling Project, the Tohoku Leading Women's Jump Up Project and the Morinomiya Project for Empowering Women in Research.

Figure 8. Increasing ratio of female academics with leadership orientation

Source: [5] SEE BIAS and BLOCK BIAS Part II: p. 16 "Female academics with leadership orientation have increased" between 2003 and 2012. Single-answer question. In 2016, multiple answer question. conditions.



5.2. The Threat of Unconscious Bias

In Japan, a typical classroom prejudice is that “girls are bad at mathematics.” When a female student in her first year of senior high school gets a high score in a mathematics test, the teacher might praise her by saying “although you are a girl, you have done well,” instead of simply saying “you have done well.” [6]

Although the teacher’s actions conform to the basic guidelines of “educating by encouraging,” this manner of praise is both patronizing and discriminating. Students report feeling embarrassed, displeased or annoyed. Consequently, their passion for mathematics might be diminished, or they might feel compelled to study less in order to get a poorer test score.

Such praise is called “favorable discrimination,” which stems from unconscious bias. It perpetuates and encourages prejudicial characterization such as “girls are not good at mathematics” or “boys are bad at cooking.”

[6] Morinaga, Y., Sakata, K., Furukawa, Y., & Fukudome, K., 2017,

“Mathematics Motivation and Gender Stereotypes of Junior and Senior High School Girls”, Japanese Journal of Educational Psychology, 65 (17) : 375-387.

6 Overcoming Unconscious Bias

Since opening its doors to high school graduates of all backgrounds in 1907 and to females for the first time in 1913, Tohoku University has been committed to diversity and gender equality. To tackle unconscious bias, especially against females, the university will look to further raise awareness and promote greater fairness and inclusivity. To that end, it has also set a goal to increase its female faculty members to 19% by the end of academic year 2021.

Everyone is guilty - to some degree - of unconscious bias. Triggers that can raise the levels of bias include stress, fatigue, or time pressures; as well as vague instructions or ill-defined evaluation standards.

It is important to acknowledge that unconscious bias exists and to recognize it. Some strategies to mitigate unconscious bias include having diverse voices around the decision making table, avoiding stereotypes and over-generalization, being empathetic to others and being an active ally to minority groups. If everyone does their part to be better, the negative impacts of both conscious and unconscious biases can be reduced.

Figure 3:

Elsevier, 2015, Mapping Gender in the German Research Arena.
<<https://www.elsevier.com/connect/gender-report>>

Figures 4, 6, 7 and 8:

Source: “SEE BIAS and BLOCK BIAS,” homepage of the Japan Inter-Society Liaison Association Committee for Promoting Equal Participation of Men and Women in Science and Engineering (EPMEWSE):
<https://www.djrenrakukai.org/unconsciousbias/see_bias_block_bias/index.html>

Figure 5: Quoted from Kido, M., 2018, “Eliminate Discrimination Against Females in Entrance Examination for Universities, ‘A curtain might be effective’”

Figure 6: Referred to “Understanding Unconscious Bias” by EPMEWSE (Renrakukai) , March 2019.

<https://www.djrenrakukai.org/doc_pdf/2019/UnconsciousBias_leaflet_eng.pdf>

Figure 7: The 2016 data is cited from “The 4th Large-Scale Survey of Actual Conditions of Gender Equality in Scientific and Technological Professions Survey Report,” 2017, figure 1.52, EPMEWSE: pp.30-31.

The mimosa color on the front cover symbolizes International Women’s Day (March 8)



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This leaflet is available
on the website of
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