Scientific Workforce Diversity Seminar Series (SWDSS) Seminar Proceedings

Is Implicit Bias Training Effective?

September 27, 2021

Table of Contents

1. Executive Summary

This document summarizes the proceedings of the **Scientific Workforce Diversity Seminar Series** (SWDSS) virtual seminar, "**Is Implicit Bias Training Effective?**" The seminar was hosted by the National Institutes of Health (NIH) **Chief Officer for Scientific Workforce Diversity** (COSWD) Office on September 27, 2021, and attended by more than 850 people from the NIH and other organizations. The discussion was meant to foster an understanding of implicit bias training effectiveness and enable individuals and organizations to reflect on how to address bias in the scientific workforce.

The seminar featured presentations from scholars with diversity and implicit bias training expertise, followed by remarks from NIH staff and a Q&A-style discussion among the seminar speakers. These proceedings detail the main points from the invited speakers' presentations and ensuing discussion on implicit bias training research, including strategies that lead to effective implicit bias training programs, alternative models that may mitigate implicit bias, and directions for future research.

A **videocast of the seminar** and the **panelists' presentation materials** are available on the SWDSS website.

2. Introduction: Opening Remarks and Participants

Research demonstrates that implicit bias—the attitudes and stereotypes that unconsciously affect our judgments, behavior, and decisions toward certain people or groups—pose barriers to recruiting and sustaining a diverse scientific workforce.[1-4] In her seminar introduction, NIH COSWD, Dr. Marie A. Bernard, noted that organizations use various strategies to provide education on bias and ways to reduce it.[5-8]

Mandatory or voluntary implicit bias training programs are a common intervention; institutions typically structure these trainings as a short, single session to help attendees recognize and learn practices to reduce their biases. The programs operate on the principle that participating in knowledge-based interventions will promote less biased decision-making in workplace interactions.

Yet, the effectiveness of this approach is in question, explained Dr. Bernard. Some research suggests that certain implicit bias training approaches may help change individual beliefs and actions. However, other evidence shows that many factors shape whether and how implicit bias training programs are effective, including their capacity to support institutional change.

The seminar presentations and discussion that followed Dr. Bernard's introduction explored the limitations of implicit bias training, strategies to address some of these limitations and improve implicit bias training programs, and alternative strategies for reducing bias in organizations.

Marie A. Bernard, M.D., NIH COSWD, moderated the seminar. The following five scholars participated in the panel presentation and ensuing discussion, presenting in order from relatively more micro-level psychological perspectives to more macro-level organizational perspectives:

- **Frank Dobbin, Ph.D.**, Henry Ford II Professor of the Social Sciences and Chair of the Department of Sociology at Harvard University

- **Markus Brauer, Ph.D.**, Professor in the Department of Psychology and the Wisconsin School of Business at the University of Wisconsin-Madison

- **Molly Carnes, M.D.**, Virginia Valian Professor of Medicine, Psychiatry, and Industrial & Systems Engineering at the University of Wisconsin-Madison

- **Shelley Correll, Ph.D.**, Michelle Mercer and Bruce Golden Family Professor of Women's Leadership at Stanford University and co-founder and director of the Stanford VMware Women's Leadership Innovation Lab

- **Robert Sellers, Ph.D.**, Vice Provost for Equity and Inclusion, Chief Diversity Officer, and the Charles D. Moody Collegiate Professor of Psychology and Education at the University of Michigan

Two NIH staff shared their reflections and discussed the implications for the NIH:

- **Albert Avila, Ph.D.**, Director of the National Institute on Drug Abuse (NIDA) Office of Diversity and Health Disparities and Deputy Director of the NIDA Office of Research Training

- **Charlotte Pratt, Ph.D.**, Deputy Branch Chief, Division of Cardiovascular Sciences, and Program Officer in Clinical Applications and Prevention at the National Heart, Lung, and Blood Institute (NHLBI)

3. Presentations: State of the Science on Implicit Bias Training Effectiveness

In their presentations, most seminar panelists agreed that implicit bias training may be valuable, but not sufficient, for creating sustainable progress on diversity, equity, inclusion, and accessibility (DEIA) outcomes. At minimum, the trainings should incorporate certain features and be part of a broader organizational DEIA strategy if the goal is fundamental institutional change. However, as discussed by the panelists, some research suggests trainings have limitations, including potential adverse effects.

This section first reviews the limitations of implicit bias training discussed by the panelists. With this understanding, the section proceeds to discuss how to address some of these limitations and design useful implicit bias trainings. However, as limitations remain even with well-designed trainings, the subsequent section then presents alternative strategies for mitigating bias suggested by the panelists.

LIMITATIONS OF IMPLICIT BIAS TRAINING FOR SUSTAINABLE PROGRESS

Implicit bias trainings may fail to reduce bias or create sustained institutional change if the trainings are a one-time event and not part of a broader institutional strategy, do not convey messages that participants are receptive to, or teach only the concept of bias rather than also target behaviors to change. In addition, there is mixed evidence on the effectiveness of mandatory trainings.

Implicit bias training cannot constitute an organization's entire bias-reducing effort, agreed panelists. Short, single-session interventions are unlikely to address the complex issues of bias, discrimination, and oppression in an organization. Dr. Shelley Correll explained that a training might not have an impact if it is a standalone intervention and the sole means of reducing bias in an institution. This approach assumes that teaching people about bias eliminates bias from their actions and attitudes.[9] Yet this theory neglects the contextual nature of bias, which varies with situations in a given environment.

Instead, as advocated by Dr. Robert Sellers, implicit bias training must be part of a larger, multi-level strategy devoted to fundamental institutional change. When implemented in this context, trainings may reinforce and help sustain institutional bias awareness and individual bias-minimizing skills, in addition to demonstrating a

broad commitment to cultural change. Dr. Sellers highlighted that participation in a one-time training can also create the false impression of immunity to subsequent bias, which is harmful if someone assumes that by knowing about implicit bias, they are no longer vulnerable to its influences.

As noted by Dr. Markus Brauer and Dr. Sellers, trainings that include messages that blame people for inequities or induce feelings of guilt are similarly ineffective, as is a failure to focus on targeted behaviors to change. Dr. Frank Dobbin described his research in university and corporate settings, suggesting that this type of implicit bias training program can be counterproductive.[10] For example, some evidence suggests training programs have not increased the diversity of tenure-track faculty—in some cases, Dr. Dobbin said, faculty diversity decreased after the initiation of anti-bias training programs.

Perspectives vary on whether implicit bias trainings should be mandatory or voluntary. For example, Dr. Dobbin mentioned that in corporate settings, diversity at the managerial level either stayed the same or decreased following mandatory anti-bias trainings, possibly because the interventions activate bias and cause backlash.

APPROACHES TO VALUABLE IMPLICIT BIAS TRAININGS

Despite these limitations, many panelists expressed support for well-designed implicit bias trainings, which have been shown to produce positive effects in some contexts. To address the limitations, the panelists discussed approaches to implicit bias training that may lead to more positive outcomes. They focused on: (1) programmatic considerations, advising organizations to consider their DEIA goals and develop evaluation plans to ensure their trainings contribute to these goals and key training features that may be more effective at reducing

bias; and (2) key features shared by trainings shown to produce positive effects, including targeted, positive approaches and messages that communicate acceptable behaviors; and easy-to-implement, skill-building tasks that enable participants to practice mitigating bias.

Panelists concurred that assessment is a fundamental part of understanding training effectiveness; defining the expected program outcome enables evaluation of the training effort. Similarly, assigning tasks to perform during the training is a starting point for understanding whether participants are learning the desired lessons. Organizations should also measure the impact of trainings on various groups, including those meant to benefit from it. Dr. Sellers and other panelists noted that thorough evaluation helps ensure underrepresented groups do not experience adverse effects or dissatisfaction with diversity efforts.

With established organizational and training goals, panelists suggested incorporating implicit bias trainings with several key features:

- **Bias Literacy.** Trainings can help reduce individual biases by making people aware of their behaviors and situations where bias occurs. Dr. Molly Carnes described the impact of voluntary, gender bias habit-breaking workshops on science, technology, engineering, mathematics, and medicine (STEMM) faculty, which suggest that anti-bias training programs can facilitate sustained behavioral change.[11,12] Participants reported greater awareness of personal bias and increased motivation to engage in bias-reducing activities three months after the workshops; the positive impacts lasted up to three years later. Dr. Carnes recommended that trainings allow participants to apply bias concepts to case studies to facilitate learning.

- **Positive Messaging.** Framing the training as a critical organizational value sends a positive message that diversity is about equitable access, one that everyone in the workplace has a role in creating. Dr. Markus Brauer described his research demonstrating that pro-diversity interventions in university settings are more likely to succeed if they include positive messages highlighting the benefits of behaving inclusively, such as talking about the obstacles faced by members of marginalized groups.[13] On the other hand, negative messages that blame people or lead to guilt are unlikely to change behavior, a point emphasized by several panelists.

- **Actionable Tasks.** Trainings tend to be more effective when they provide skills and a common language for addressing bias. Similarly, a training is more likely to be effective if it includes case studies and current scientific literature on bias for context, focuses on behavioral change, and provides tasks for participants to practice seeing bias and mitigating it, according to several seminar panelists. For example, one study revealed that targeting one behavior to change and designing an intervention around this behavior can persuade an audience to adopt pro-diversity attitudes and actions,[14] especially if the training includes simple, actionable tasks that enable participants to practice mitigating bias. Based on her research findings, Dr. Carnes recommended that trainings provide participants several evidence-based strategies to practice, to additionally note strategies that do not work, and to incorporate a written implementation intention exercise (i.e., when a person is in x circumstance, they will engage in y behavior).

- **Tailored Content.** An organization must tailor training content to its various audiences and may consider targeting a segment of staff to encourage the adoption of specific behaviors. As noted by Drs. Correll and Brauer, the target audience in an organization may often be the "moveable middle" or those who are more persuadable and open to new ways of doing things. Additionally, Dr. Brauer noted that it is challenging to change several behaviors simultaneously, so it may be most effective to implement a focused training around a few key issues, followed by additional trainings that address other critical matters.

- **Voluntary.** Dr. Carnes also explained that voluntary trainings tend to produce positive changes in pro-diversity and inclusion attitudes and behaviors. For example, one of these same studies found that when 25 percent of a university department's faculty attended a voluntary bias education workshop, significant increases in self-reported action to promote gender equity occurred.[11] Dr. Carnes noted that the finding suggests trainings can have a social diffusion effect, where anti-bias messages permeate an entire university department over time.

4. Alternative Models That May Mitigate Implicit Bias

Given the limitations of implicit bias training, seminar panelists recommended alternative approaches to reducing bias. Some suggested that these strategies could supplement well-designed implicit bias trainings, while others maintained they be used instead. Their proposed approaches include:

- **Social Norms Methods.** The use of social norms approaches—an intervention strategy focused on changing people's perceptions about what is socially normative within the institution—may help change people's behavior, explained Dr. Brauer. This approach highlights the benefit of drawing attention to pro-diversity values and attitudes to create a more diverse, inclusive workplace culture.

- **Organizational Programs.** Dr. Dobbin presented his research showing that engaging faculty in diversity task forces and mentoring programs can lead to more diverse and inclusive workplaces in science and academia. In addition, several accountability initiatives show positive effects on faculty diversity, including institutional reviews of start-up compensation packages to ensure pay equity, "time in rank" to ensure timely progress toward tenure, and applicant pools to ensure the best qualified applicants are selected. Support for faculty partners and children through work–life programs can also positively impact women and underrepresented groups.

- **Tools to Reduce Bias.** Dr. Correll recommended that managers and decision-makers create tools to minimize the conditions that amplify bias, such as established criteria and scoring rubrics to evaluate people during hiring and promotion processes. These tools ensure organizations assess all employees fairly and stereotypes do not drive decision-making.

- **Surveys and Checklists.** Dr. Brauer also suggested that organizations implement regular climate surveys of staff and other stakeholders to measure progress and identify areas of concern. A diversity checklist may also help an academic department, for example, understand its progress on items such as recruiting and retaining students from underrepresented groups. On the individual level, behavior checklists can encourage staff to self-evaluate their progress on reducing bias in their daily attitudes and interactions.

5. Reflections From the NIH

Drs. Albert Avila and Charlotte Pratt shared their initial reactions to the information speakers shared, reflecting especially on their relevance for NIH. Dr. Avila highlighted that the presentations showed that implicit bias training, along with other steps, may lead to change. He reviewed some of the strategies that may help enable implicit bias trainings to be effective, noting the trainings should be easy to implement, be specific to a target audience, and focus on changing behaviors. Dr. Avila concluded that the seminar demonstrated that implicit bias training can be effective and that ongoing conversations about bias can help mitigate it within the NIH and other organizations.

Dr. Pratt also emphasized these points and the following NIH perspective: Great minds require diverse perspectives, great minds think differently, and diversity leads to excellence and is the key to innovation. She highlighted that implicit bias training without practice will not be successful; individuals and organizations must regularly put the lessons learned into practice to reduce bias. Dr. Pratt reflected on key seminar insights, noting that while implicit training can help people become aware of their behavior and recognize situations where bias is in play, efforts to reduce bias should be ongoing to create sustainable institutional change.

> "Organizations must **identify the contributors** to workplace inequities and **change bias-enabling processes** to **achieve equity** in the scientific workforce."

6. Implications and Future Research Directions

Additional research is needed to understand the overall effect of implicit bias training programs on institutional transformation in various settings, agreed the seminar panelists. As emphasized by Dr. Dobbin, corporations and universities began implementing anti-bias trainings in the 1960s and 1970s. Still, scant scientific data suggests these interventions prevent unintended discrimination and create more inclusive workplaces in the long term.

Evidence is also needed to understand how to structure trainings in terms of the audience and message and assess whether trainings should be mandatory or voluntary. Similarly, further study could improve our understanding of whether trainings can produce long-term changes to individuals' attitudes and behavior. This research will lead to the creation of evidence-informed programs that effectively counter inequities and allow people from all backgrounds and perspectives to thrive in STEMM careers.

7. Concluding Thoughts

Increasing awareness of implicit bias and relying on training programs alone will not eliminate bias from individuals or workplace environments. Instead, seminar panelists emphasized the need for a comprehensive institutional change strategy, with well-designed, actionable implicit bias trainings being a potentially valuable part of the strategy. Mitigating implicit bias through this approach requires organizations to address the root causes of biases in their structures, policies, and procedures. While individuals may be guided to recognize and manage their biases, organizations must identify the contributors to workplace inequities and change bias-enabling processes to achieve equity in the scientific workforce.

References

1. Roper RL. Does gender bias still affect women in science? *Microbiology and Molecular Biology Reviews*. 2019;83(3). doi:10.1128/mmbr.00018-19

2. Asplund M, Welle CG. Advancing science: How bias holds us back. *Neuron*. 2018;99(4):635-639. doi:10.1016/j.neuron.2018.07.045

3. Rimnac CM. Editorial: Minimizing workplace bias—what surgeons, scientists, and their organizations can do. *Clinical Orthopaedics & Related Research*. 2020;478(4):691-693. doi:10.1097/corr.0000000000001160

4. Moss-Racusin CA, Dovidio JF, Brescoll VL, Graham MJ, Handelsman J. Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences*. 2012;109(41):16474-16479. doi:10.1073/pnas.1211286109

5. FitzGerald C, Martin A, Berner D, Hurst S. Interventions designed to reduce implicit prejudices and implicit stereotypes in real world contexts: A systematic review. *BMC Psychol*. 2019;7:29. doi:10.1186/s40359-019-0299-7

6. Rodriguez N, Kintzer E, List J, et al. Implicit Bias Recognition and Management: Tailored Instruction for Faculty. *J Natl Med Assoc*. 2021;113(5):566-575. doi:10.1016/j.jnma.2021.05.003

7. Sukhera J, Watling CJ, Gonzalez CM. Implicit Bias in Health Professions: From Recognition to Transformation. *Acad Med*. 2020;95(5):717-723. doi:10.1097/ACM.0000000000003173

8. White AA 3rd, Logghe HJ, Goodenough DA, et al. Self-Awareness and Cultural Identity as an Effort to Reduce Bias in Medicine. *J Racial Ethn Health Disparities*. 2018;5(1):34-49. doi:10.1007/s40615-017-0340-6

9. Correll SJ. SWS 2016 Feminist Lecture: Reducing gender biases in modern workplaces: A small wins approach to organizational change. *Gender & Society*. 2017;31(6):725-750. doi:10.1177/0891243217738518

10. Dobbin F, Kalev A. Why doesn't diversity training work? The challenge for industry and academia. *Anthropology Now*. 2018;10(2):48-55. doi:10.1080/19428200.2018.1493182

11. Carnes M, Devine PG, Baier Manuel L, et al. The effect of an intervention to break the gender bias habit for faculty at one institution. *Academic Medicine*. 2015;90(2):221-230. doi:10.1097/acm.0000000000000552

12. Sheridan J, Fine E, Romero M, et al. Improving Department Climate Through Bias Literacy: One College's Experience. *J Women Minor Sci Eng*. 2021;27(2):87-106. doi:10.1615/JWomenMinorScienEng.2021032729

13. Brauer, M., Dumesnil, A. and Campbell, M.R. Using a social marketing approach to develop a pro-diversity intervention. *Journal of Social Marketing*. 2021;11(4): 469-488. **https://doi.org/10.1108/JSOCM-09-2020-0174**

14. Moreu, G, Isenberg, N, & Brauer, M. How to promote diversity and inclusion in educational settings: Behavior change, climate surveys, and effective pro-diversity initiatives. *Frontiers in Education*. 2021;6. doi:10.3389/feduc.2021.668250