Proposal for Unconscious Bias Training Utilizing Virtual Reality

Toward Accelerating Diversity, Equity & Inclusion

Arisa Ema

Associate Professor, Institute for Future Initiatives, The University of Tokyo

Kaoru Chujo

Visiting Researcher, Institute for Future Initiatives, The University of Tokyo
President and CEO, SoW Insight, Inc.

Takuji Narumi

Associate Professor, Graduate School of Information Science and Technology, The University of Tokyo

Yuji Hatada

Research Associate, Interfaculty Initiative in Information Studies, The University of Tokyo

東京大学未来ビジョン研究センター
Institute for Future Initiatives
The University of Tokyo

Executive summary

Currently, various organizations, including businesses, government bodies, and educational institutions, are actively pursuing Diversity, Equity, and Inclusion (DE&I) initiatives. DE&I promotion encompasses various critical issues in Japan, such as addressing gender disparities, fostering innovation, environments where individuals can work authentically, and overall well-being. However, the latest results from 2023 for Japan on the Global Gender Gap Index, which is published annually by the World Economic Forum, are concerning; Japan ranked 125th out of 146 countries, placing it at the bottom among the seven advanced countries and marking its lowest position to date. Additionally, in the United Nations World Happiness Report for 2022, Japan ranked 54th on the World Happiness Index, again placing it at the bottom of advanced nations. Therefore, accelerating DE&I efforts is an urgent priority for the country.

One of the biggest obstacles to DE&I is unconscious bias. Since everyone has an unconscious bias, this bias is ubiquitous and affects organizations in various ways, including their workplace human resource- and relations-related decision-making. In recent years, an increasing number of organizations have adopted training programs to overcome unconscious bias, albeit these programs remain at the exploratory stage. As aforementioned, there is much public interest in more effective approaches.

Generally, organizations should take a systematic approach to effectively address unconscious bias across the whole of the organization. This includes optimizing training methodologies to maximize their impact and utilizing data-based approaches for assessment and application of these training programs. Accordingly, this proposal aims to accelerate DE&I efforts in the Japanese government, businesses, and organizations by recommending their engagement in strategic DE&I initiatives, data-driven visualization and monitoring, and proactive unconscious bias training using virtual reality (VR).

Proposal for a VR-based unconscious bias training program

1. **Develop organization-wide DE&I strategy policies and promote understanding through ongoing information dissemination**

To achieve the goals of DE&I efforts, they should be tied to the organization's mission, the DE&I strategy should be developed as a part of the organization's overall growth strategy, and unconscious bias training efforts should be positioned within that strategy. Thus, the most the most important factor in maximizing the impact of DE&I efforts is involving the entire organization in DE&I under the commitment of top management. Nonetheless, most organizations are likely to have a certain segment of its population who will not understand the necessity of DE&I or not be interested in these efforts. This makes it an important endeavor to continuously communicate why DE&I promotion is necessary, promote understanding among organizational members, and foster awareness of the related issues that make these efforts warranted.

2. **Visualization through data collection, mechanism construction, and monitoring**

To be able to understand the company's actual situation regarding unconscious bias, data related to diversity, examples of cases inside the organization related to unconscious bias, and information on operations and processes affected by bias should be collected. Then, to promote behavioral change in the organization, training programs should be provided on a situation basis, and so should a decision-making system and environment less susceptible to

unconscious bias.

It is also inevitable for behavioral changes regarding unconscious bias to be a long-term effort, making it critical to ensure monitoring schemes to assess whether the expected changes within the organization are actually occurring. Investigations should be conducted not only before and after the training but also across the long-term efforts and experiences; an example would be conducting monitoring procedures—using evaluation indicators according to the expected behavioral changes—after several months, six months, and one year of training, and then performing continuous monitoring.

3. Active training using virtual reality

To facilitate behavioral change regarding unconscious bias, not only passive forms of training (e.g., that impart knowledge about unconscious bias) but also interactive and active experiences (e.g., that allow participants to actively recognize differences in the perceptions of themselves and those of others) should be incorporated into training programs. Accordingly, we propose the incorporation of VR experiences into training as an effective interactive methodology. VR use holds the advantage of simulating two viewpoints that may be difficult to experience in the real world, such as allowing for people to experience a singular interaction situation between a supervisor and a subordinate who has a child from the separate perspectives of the supervisor and of the subordinate. Thus, VR use may allow for effectively inducing awareness through enabling people to observe and experience the same situation from different perspectives. VR implementation can also be followed by discussions on the subject matter based on the shared experiences. This holds the potential of leading to the development of specific methods for behavioral change at the organizational level.

Process for formulating this policy recommendation

A VR-based unconscious bias training initiative, which serves as the central axis of this proposal, has been underway since August 2021 as part of the Moonshot Research and Development Project's Goal 1, which is the "Realization of a society in which human beings can be free from limitations of body, brain, space, and time by 2050," specifically within the context of a research titled "Cybernetic Avatar Technology and Social System Design for Harmonious Co-experience and Collective Ability." We developed the VR training content by incorporating feedback and requests from DE&I professionals and working parents, which were obtained through discussions with these professionals in corporations and interviews with working parents on ways to balance parenthood and work. We conducted seven workshops targeting corporations and organizations, through which we refined the training framework and assessed its effectiveness. This initiative was also incorporated into the project for fiscal year 2022 of the Industrial Economic Research Commission, a commission of the Ministry of Economy, Trade, and Industry, which is titled "Survey on the Approach and Effectiveness Measurement Indicators for Unconscious Bias Training to Promote Diversity." In addition to conducting a workshop-based validation, we researched existing studies regarding unconscious bias and interviewed DE&I professionals from companies that actively promote diversity management. The content of the initiative, including the related findings, were also presented at the 27th Japan Virtual Reality Society Conference held in September 2022. These separate validation procedures collectively contributed to the compilation of this policy proposal.

1. DE&I promotion and the need for its acceleration

Amidst the increase in uncertainties related to recent public health crises (e.g., COVID-19), international dynamics, and a declining working-age population in Japan and worldwide due to aging, it is imperative for organizations to enhance the well-being of each individual while considering diversity, and to accelerate Diversity, Equity, and Inclusion (DE&I) initiatives. These efforts serve to enable individuals to maximize own potential and create value [1]. However, Japan's recent global index rankings paint a picture of concern. In the 2023 Global Gender Gap Index by the World Economic Forum, Japan ranked 125th out of 146 countries [2], placing it at the bottom among the seven advanced countries worldwide. Similarly, in the United Nations World Happiness Report for 2022, Japan ranked 54th on the World Happiness Index, again marking it as the lowest among the seven advanced nations in the world [3]. This indicates that DE&I promotion in our country faces significant challenges.

One obstacle hindering DE&I in organizations is the presence of unconscious bias, which is said to be inherent to all individuals. Unconscious bias refers to distortions and prejudices in perceptions and judgments caused by preconceived notions and stereotypes. Various companies currently use classroom-style training aimed at raising awareness of unconscious bias and its management. However, because unconscious bias operates at an unconscious level, the simple acquiring of knowledge is not always effective in driving behavioral change [4].

However, in recent years, companies have explored pseudo-experiential training using VR, which has garnered attention and is currently being developed and implemented [5]. VR allows participants to virtually experience various scenarios in a simulated environment. Therefore, the benefits of VR-based training include increased mastery and retention through hands-on training via pseudo-experiences, increased empathy toward simulation participants, expanded perspectives and viewpoints, and behavioral changes. However, VR-based unconscious bias training programs and approaches have yet to be established.

2. Addressing unconscious bias

(1) What is unconscious bias?

Unconscious bias, as a concept referring to "biased perceptions or distorted cognitions that individuals are unaware of," was initially mentioned by psychologists Greenwald and Banaji in 1995 [6]. People don't perceive all sensory information from their bodies in its "raw" state; information that enters consciousness has undergone various processes of unconscious processing beforehand. Within these unconscious processes, there can be psychological cognitive distortions and biases related to race, gender, and other undesired directions for individuals and society [7]. For example, a study comparing job applications for a managerial position in a laboratory with male or female applicant names found that even though the applications had the same content, male applicants were perceived as

[1] Ministry of Economy. (n.d.). Trade and Industry Promotion of Diversity Management. https://www.meti.go.jp/policy/economy/jinzai/diversity/index.html

[2] World Economic Forum. (2023). Global Gender Gap Report 2023. https://jp.weforum.org/reports/global-gender-gap-report-2023/

[3] Helliwell, J. F., Layard, R., Sachs, J. D., Aknin, L. B., De Neve, J.-E., & Wang, S. (Eds.) (2023). World Happiness Report 2023 (11th ed.). Sustainable Development Solutions Network. https://worldhappiness.report/ed/2023/

[4] Gino, F., & Coffman, K. （2021）. Unconscious Bias Training That Works (Takahashi, Y., transl.). Harvard Business Review.

[5] Recruit Works Institute. (2018) Experiencing Bias-Reporting and Brain "Cheat" in VR Worlds. Work No. 150, pp. 22–24. https://www.works-i.com/works/no150/

[6] Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: attitudes, self-esteem, and stereotypes. Psychological Review, 102(1), 4–27. https://doi.org/10.1037/0033-295x.102.1.4

[7] Leonard Mlodinow (2013). Subliminal: How Your Unconscious Mind Rules Your Behavior (Mizutani, J., transl.). Diamond Inc., p.211-236

more competent and more likely to be hired [8].

Unconscious bias is acquired by everyone, often based on past experiences, external opinions, and daily exposure to information. It's a characteristic of how the human brain processes information, and while not always negative, it's crucial to be aware of any unconscious biases when discussing diversity, equity, and inclusion in both oneself and society. The Gender Equality Bureau of the Cabinet Office has recently published survey results on gender-related unconscious bias in Japan [9].

(2) Impact of unconscious bias on the organization

The impact of unconscious bias at the individual level on such bias at the organizational level is said to particularly affect organizational decision-making related to personnel and interpersonal relationships. For instance, a significant impact of unconscious bias is often observed during talent acquisition, primarily because of the "halo effect" [10], which makes people be easily influenced by first impressions. Preconceptions such as "male leaders are desirable" or "it's pitiable to place women in negotiation roles" are typical examples of stereotypes, and there are numerous instances where job assignments within companies are influenced by such stereotypes [11]. Many companies get employees involved in self-assessment measurements during performance evaluations, and it has been observed that women tend to evaluate themselves more critically than men; this self-assessment discrepancy, in turn, can influence superiors' evaluations [12]. Additionally, the bias known as the "impostor syndrome," which makes individuals perceive themselves as incapable of pursuing promotions when encouraged to do so, is attributed to the inability to accurately assess own capacities [13].

The greatest risk that unconscious bias poses for the organizational itself is the creation of a uniform organization, which generally goes against the current trends of organizational environments—which are becoming increasingly complex. In uniform groups, the range of knowledge and perspectives that can be covered by the talented people of this group, which are expected to share similar knowledge and perspectives, will likely not be very different from those of the other group members. At the same time, for organizations to be able to "read the world" and realize value creation, there is the need for "group intelligence," which in turn critically requires diversity and different perspectives. This is because different experiences and perspectives can produce different insights and wisdom and cover a wide range of problem spaces [14].

(3) Dealing with unconscious bias in organizational management

The identification of unconscious biases regarding race and gender in American companies in the 2010s led to

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[8] Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. Proceedings of the national academy of sciences, 109(41), 16474-16479.

[9] Gender Equality Bureau Cabinet Office. (2023). FY2022 Research Study on Unconscious Assumptions (Unconscious Bias) Based on Gender. https://www.gender.go.jp/research/kenkyu/seibetsu_r04.html
Gender Equality Bureau Cabinet Office. (2022). FY2021 Research Study on Unconscious Assumptions (Unconscious Bias) Based on Gender. https://www.gender.go.jp/research/kenkyu/seibetsu_r03.html

[10] Thorndike, E. L. (1920). A constant error in psychological ratings. Journal of Applied Psychology, 4(1), 25–29. https://doi.org/10.1037/h0071663

[11] Cheryan, S., & Markus, H. R. (2020). Masculine defaults: Identifying and mitigating hidden cultural biases. Psychological Review, 127(6), 1022–1052. https://doi.org/10.1037/rev0000209

[12] Klimoski, R., & Inks, L. (1990). Accountability Forces in Performance Appraisal. Organizational Behavior and Human Decision Processes, 45(2), 194–208. https://doi.org/10.1016/0749-5978(90)90011-W

[13] Kumar, S., & Jagacinski, C. M. (2006). Imposters have goals too: The imposter phenomenon and its relationship to achievement goal theory. Personality and Individual Differences, 40(1), 147–157. https://doi.org/10.1016/j.paid.2005.05.014

[14] Syde, M. (2021). Rebel Ideas: The Power of Diverse Thinking. John Murray Press, pp. 59–109.

training and responses to unconscious bias in several progressive companies [15]. There are three key components that should be implemented to address unconscious bias in organizations [16]: point 1, develop a company-wide strategy to maximize impact; point 2, provide opportunities for employees to become aware of unconscious bias and ways to change behavior; point 3, create a mechanism and environment that encourages behavior change. To create training initiatives to recognize biases and ways to change behavior, as indicated in point 2, it is important to provide opportunities for people to take the perspective of others, as this can stimulate their imagination and create empathy. Specific related measures considered to be effective include the following:

(i) Learning through familiar cases that occur daily in the workplace and emotional content.

(ii) Gain awareness through experience and small-group discussions.

(iii) Encourage participants to think concretely about how to apply what they have learned in their daily lives and introduce best practices for handling bias-related situations.

Moreover, three important perspectives should be considered in creating a mechanism and environment that encourages employee behavior change, as indicated in point 3. First, a company-wide strategy must be established, and a company-wide commitment to improving DE&I must be made. Second, to visualize the current situation of the organization related to bias and its effects, stakeholders must collect data/information on the current status of diversity, operations, and processes that may be affected by bias, and the effects of unconscious bias training and systems should be measured. Third, behavioral science-based nudges and systems should be incorporated. Nudges have attracted attention in recent years as a way to encourage people to implement new initiatives. For example, regarding nudges to help promote decision-making that is less susceptible to unconscious bias, they can include job requirement clarification; reminders for those responsible on the importance of clearly understanding the job requirements before making decisions about promotion and candidate evaluation for management positions; asking supervisors to think carefully about own evaluations before looking at their subordinates' self-evaluations. These procedures may enable employees to apply the lessons learned from behavior change training to their daily actions.

One way to advance gender equality in organizations is to take advantage of the effects of same-sex role models. For instance, if a company's boardroom is decorated with portraits of past presidents and all of them are male, this may actually reinforce the stereotype that leaders are supposed to be male. Since "seeing is believing," increasing the percentage of leaders who contradict the male stereotype, whether in reality or through portraits, can serve as a powerful tool for greater awareness of biases and behavioral change [17].

(4) Examples obtained from company interviews

Although the previous section primarily introduced cases from overseas companies, an increasing number of organizations in Japan have also started to address unconscious bias. The following three efforts are common to Japanese companies that have achieved relevant related results [18].

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[15] Google Ventures. (2014) Unconscious Bias @ Work | Google Ventures. https://www.youtube.com/watch?v=nLjFTHTgEVU

[16] Gino, F., & Coffman, K. (2021). Unconscious Bias Training That Works (Takahashi, Y., transl.). Harvard Business Review.

[17] Bohnet, I. (2018). What Works: Gender Equality by Design (Ikemura, C., transl.; with commentary by Otake, F.). NTT Publishing, pp. 247–267

[18] The University of Tokyo's Institute for Future Initiatives Event. (2023). METI Commissioned Project Report Meeting 1: How to tackle Unconscious Bias? On Unconscious Bias Training for Diversity Management Promotion. The University of Tokyo. https://ifi.u-tokyo.ac.jp/event/14738/
Ministry of Economy, Trade and Industry. (2023). FY2022 Industrial Economy Research Commissioned Project (Survey on Unconscious Bias Training Programs and Effectiveness Measurement Indicators to Promote Diversity Management). Ministry of Economy, Trade and Industry. https://www.meti.go.jp/policy/economy/jinzai/diversity/R4_diversity_bias.pdf

(i) Implementation and continuation of strategic initiatives

Japanese companies that address unconscious bias are strongly aware of its importance and give due credit to the promotion of diversity management efforts. To this end, they collect data on diversity and on examples of situations within the company caused by unconscious bias, and promote the visualization of these elements through data and information collection. For example, some companies are currently conducting thorough investigations into the factors hindering gender equality achievements and processes involving unconscious bias. They also recognize and give due value to the fact that some people do not understand the meaning of diversity promotion, and thus are devising initiatives to address this issue. This is an important attitude to ensure DE&I promotion acceleration. Global companies also recognize that there is much to learn from leading global cases in addressing diversity and unconscious bias, and that it is often helpful to consider these issues from a global standard. Thus, they acknowledge the importance of looking at global cases, considering whether the methods they use are appropriate for a company based on the corporate culture and philosophy, and trying these methods out as quickly as possible.

(ii) Provision of training suitable for the company

These Japanese companies use materials that are considered appropriate for the company and encourage employees to change their behavior through discussion. They use own case studies and those from other companies that fit the organizational culture to encourage employees to think about and accept the unconscious bias issues as their own. In addition, companies that recognize the benefits of group discussions incorporate them into their training programs alongside learning-based procedures.

(iii) Establishment of mechanisms and environments to promote behavioral change

These Japanese companies are currently devising mechanisms and environments that promote behavioral change by incorporating behavioral science-based nudges and mechanisms. Specific examples include the participation of a person in charge of diversity and/or in charge of monitoring biases in evaluation meetings; verbalization and clarification of requirements for promotion and management candidates, and ensuring that the selection of candidates is performed based on these requirements; introduction of a system to provide experiential training amid regular work; sending messages internally and externally that the company values efforts to deal with unconscious bias.

As an example of how becoming aware of biases can improve discussions and lead to psychological safety, we received feedback from an employee who said, "I realized that my feelings of being undervalued in my day-to-day work might be due to bias, and this realization made it easier for me to engage in conversations. Conversations have increased, and as a result, my psychological safety has improved." It is essential to strive to increase the number of such positive experiences and perceptions in employees, and this can be done through efforts to address unconscious bias.

3. VR-based unconscious bias training

Learning others' perspectives is important in unconscious bias training; however, in e-learning and video-based learning, people may need to engage in a certain degree of cognitive effort and imagination to imagine the perspective of others, which is not always an easy task. Meanwhile, VR enables people to have a more in-depth, personal presence than media such as text and video. Presence is considered to be a sensation resulting from the combination of two

aspects: "a feeling as if you are really in that place" (Place illusion) and "a sensation that events happening in front of you are genuinely occurring" (Plausibility illusion) [19]. VR that creates a high level of presence is believed to elicit behavior from the experiencer that is closer to reality [20] and can evoke stronger emotions than traditional media [21].

In this proposal, we provide an overview of our experience with VR-based unconscious bias training, including the VR-based content that we developed for parenting simulations [22], and insights gained from effectiveness measurements [23]. Structured as a workshop, the training included not only the VR experience but also two types of discussions based on the common experience shared through the VR-based training.

(1) Workshop outline and characteristics

In the workshop, employees raising children and their supervisors, colleagues, and subordinates experienced the actual conditions and concerns of supervisors and those of employees raising children through VR, and then discussed these experiences. The aim of the workshop was deepening mutual understanding and finding concrete measures that can be implemented in the future. The VR content created for this project allows for an interactive experience and for participants to experience events in the workplace from two perspectives: the supervisor's perspective, and the subordinate's (who is raising a child) perspective.

(i) Experience from the supervisor's perspective (in an office environment)

While you, the supervisor, is working in the office, a subordinate (who is raising a child) greets you, the supervisor, and leaves for home. Subsequently, an urgent request comes from a client and your own supervisor requests a prompt response from you. However, it becomes apparent that the prompt handling of this request requires you to assign tasks to the subordinate, who in turn has already gone home, so you reluctantly request the tasks via an email.

(ii) Experience from the perspective of the subordinate who is raising a child (in the home environment)

While eating dinner with your child at home, you, the subordinate, receive an email request for urgent work from your supervisor. While dealing with the child requests for water and other things, you try to complete the requested tasks. However, you also have to deal with situations such as a the child spilling the soup when you briefly divert your attention. Ultimately, you are unable to finish your work within the allotted time, and the experience concludes.

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[19] Slater M. (2018). Immersion and the illusion of presence in virtual reality. British Journal of Psychology (London, England: 1953), 109(3), 431–433. https://doi.org/10.1111/bjop.12305

[20] Slater, M. (2009). Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments. Philosophical Transactions of the Royal Society B: Biological Sciences, 364(1535), 3549-3557.

[21] Riva, G., Mantovani, F., Capideville, C. S., Preziosa, A., Morganti, F., Villani, D., ... & Alcañiz, M. (2007). Affective interactions using virtual reality: the link between presence and emotions. Cyberpsychology & behavior, 10(1), 45-56.

[22] For employees who a raising children to achieve better work results, it is essential for organizations to have not only a system in place to facilitate their work, but also a work environment that provides cooperation and understanding from the people they work with. However, it may often be difficult for persons not directly involved with and aware of the details of childrearing to understand the actual situation of employees raising children, and there are many situations that hinder the efficient communication between different parties because of the presence or absence of childrearing experience. It is also urgent for organizations to foster a workplace environment that facilitates for men to take childcare leave because of child-related emergencies.

[23] For more details on VR training and the verification of its effectiveness, please refer to the following literature:
Virtual Reality Society of Japan. (2022). 2C2-4 Proposal for a workshop to promote mutual understanding among groups using VR perspective taking. Presented in the 27th Annual Conference of the Virtual Reality Society of Japan. https://conference.vrsj.org/ac2022/program /doc/2C2-4.pdf
Ministry of Economy, Trade and Industry. (2023). FY2022 Industrial Economy Research Commissioned Project (Survey on Unconscious Bias Training Programs and Effectiveness Measurement Indicators to Promote Diversity Management). Ministry of Economy, Trade and Industry. https://www.meti.go.jp/policy/economy/jinzai/diversity/R4_diversity_bias.pdf
Ministry of Economy, Trade and Industry. (n.d.). Promotion of Diversity Management. https://www.meti.go.jp/policy/economy/jinzai/diversity/index.html

Fig. 1 Example of VR content scene

(A) First example of a scene from the supervisor's perspective: A subordinate comes to greet the supervisor before leaving for home.

(B) Second example from the supervisor's perspective: An e-mail requesting work is sent to a subordinate, as you have no choice but to do so. The avatar of the person wearing the VR is reflected in the mirror.

(C) First example from the subordinate's perspective: Having a meal with the child.

(D) Second example from the subordinate's perspective: A child requests water while you are working, and the person wearing the VR must pour the water for the child from a pot.

From the supervisor's perspective, efforts were made to increase, as much as possible, the conflict associated with requesting overtime work from a subordinate who is raising a child. From the perspective of the subordinate, adjustments were made to facilitate the experience of two distinctive elements related to balancing childcare and work: the constant attention required by children, and the guilt that people often feel when they become aware that both childcare and work are left incomplete. Furthermore, efforts were made to make the interaction between the child and the experiencer as close to reality as possible.

(2) Effects of workshop validation

In the initiative, seven workshops with 72 participants were held at different Japanese organizations. The following three methods were used to measure workshop effectiveness.

(i) Analysis using the Inclusion of the Other in the Self Scale [24]

The Inclusion of the Other in the Self Scale is a measurement tool used to gauge the psychological distance from others. The results of a comparison between before and after the VR experience and before and after the discussions after the VR experience showed significant reductions regarding psychological distance. The findings of these workshops, which included the use of VR experiences to immerse oneself in different perspectives and the engagement in discussions based on these experiences, suggests the potential of VR to foster mutual empathy toward others in different positions and subsequent behavioral changes.

(ii) Free-text questionnaire analysis

Open-ended questionnaires were applied before and after the workshop and one month after the workshop, and these served to assess how the entire workshop, including the VR experience, promoted changes in participants' awareness and behavior. In total, 84% of the participants stated that their experiences during the workshop caused a

[24] Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. Journal of Personality and Social Psychology, 63(4), 596–612. https://doi.org/10.1037/0022-3514.63.4.596

change in their awareness and behavior. The main findings were an increase in communication with and consideration of others.

(iii) Thematic analysis: qualitative analysis

The contents of the discussions after the VR experience were analyzed using the qualitative analysis and thematic analysis methods [25]. This analysis revealed insights into the difficulty of imagining the roles of superiors and subordinates through VR experiences, and that subsequent discussions were facilitated by them having had a common experience through the use of VR. Expectations for the use of VR for themes other than childrearing were also discussed; there were conversations about the possibility of attracting the interest of diverse groups through the introduction of new technology, such as VR, to training; there were talks about other expectations for VR-based training.

4. Recommendations based on the unconscious bias training initiative

Building upon these findings, we propose strategic efforts toward accelerating DE&I in governments, businesses, and organizations. These efforts include policy development, visibility, and framework construction through data collection and monitoring, as well as the adoption of VR-based proactive unconscious bias training.

1. Develop organization-wide DE&I strategy policies and promote understanding through ongoing information dissemination

Each organization should determine which DE&I efforts are important for and associate with the organization's mission, incorporate a DE&I strategy into the organization's overall growth strategy, and position efforts to address unconscious bias within that strategy. The promotion of DE&I in organizations can be an important measure to deal with several important issues in Japan, such as closing the gender gap, stimulating innovation, and creating an environment in which individuals can work in their own ways and improve their well-being. If we simply focus on achieving numerical targets (e.g., the percentage of women in management positions), we risk losing sight of the original purpose of DE&I promotion.

One of the common issues regarding the perceptions of many of organizations interviewed through the workshops was that there is a certain segment of the organizational population that "does not see the need for DE&I" or "is not interested in DE&I." In a gender-related awareness survey conducted this year (2023), when asked, "Do you think it is necessary to address Japan's low Gender Gap Index?", more than 30% of the respondents answered "Don't think so/Not think so much" [26]. There are several anticipated reasons for this, such as misconceptions that DE&I is solely about women's advancement, or even the belief that it does not concern employees personally. However, the fundamental issue here lies in the insufficient sharing of information about the reasons behind DE&I within the organization, which is the most critical aspect of DE&I promotion. These findings underpin the importance of continuing to communicate the importance and necessity of DE&I promotion by linking DE&I efforts to the increased

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[25] Thematic analysis is a method that attempts to explain phenomena occurring in textual data extracted from interviews and discussions. It allows researchers to identify recurring topic patterns and statements in the data and summarize them as themes. The detailed procedure was adapted from the following study: Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

[26] Biglobe. (2023). Gender awareness survey. https://www.biglobe.co.jp/pressroom/info/2023/07/230705-1

recognition (at various academic and practical instances) that these efforts can lead to employee psychological safety, engagement, and well-being. Stakeholders should promote awareness of these issues among all members of the organization.

2. Visualization through data collection, mechanism construction, and monitoring

Organizations should collect data regarding diversity, examples of in own organization caused by unconscious bias, and information on operations and processes affected by bias, and the actual situation pertaining to unconscious bias should be made visualizable through these efforts. Companies and organizations that have been effective in their diversity management endeavors have commonly promoted such visualization through data and information collection measures. Understanding the actual situation regarding unconscious bias and being able to visualize these problems seem thus to be indispensable for accelerating DE&I promotion.

For related training to be effective, it is necessary to devise ways to help employees accept and think about unconscious biases on their own. To this end, it is desirable to understand and utilize examples from inside the company, and examples that fit the company's culture. To promote behavioral change at the organizational level, it is required for the training design to be based on the actual situation of the company, and for the company to incorporate decision-making mechanisms and an organizational environment that lead to decisions less susceptible to unconscious bias and concordant with the company's actual situation regarding such bias. Organizations are recommended to incorporate science-based mechanisms and nudges following findings in the behavioral science field.

In addition, behavioral changes to tackle unconscious biases are inevitably going to take place in the long term. Therefore, organizations should do the following: continuously monitor the shaping of the expected behavioral changes; investigate whether the differences observed from before to after training continue in the long term (e.g., through conducting monitoring procedures after several months, six months, and/or one year); use evaluation indicators according to the expected changes across all these monitoring efforts. Many companies and organizations engage in DE&I promotion with the aim of creating an environment where individuals can contribute to the team while expressing their uniqueness, or can even work autonomously within a team with a sense of trust. Consequently, the use of indices such as psychological safety, work engagement, and work well-being for measuring the effectiveness of DE&I strategies has increased. This makes the incorporation of these indicators into the design of various organizational endeavors—namely, the design of training for unconscious bias awareness, company mechanisms and environment aimed at promoting behavioral change, and continuous monitoring measures—a reliable methodology for DE&I initiative acceleration from a long-term perspective.

3. Active training using virtual reality

To facilitate behavioral change in organizational settings regrading unconscious bias, it is important to provide not only knowledge-based passive training about the topic, but also to incorporate active experiences into the training, especially those that foster awareness of perception divergences between oneself and others. Observing a single simulated situation in VR from the perspective of own role (e.g., a supervisor in real life engaging in the VR experience from the perspective of the supervisor) and from the perspective of the role of others (e.g., a supervisor in real life engaging in the VR experience from the perspective of the subordinate) may be able to trigger insights

more effectively. Then, providing follow-up discussions that take these shared experiences into consideration can lead to concrete and reliable methodologies for promoting behavioral change regarding unconscious bias in organizations. VR-based training offers several advantages in comparison to non-VR-based training. First, while it may be difficult for most to be aware, amid real-life situations and experiences, of how different people perceive a singular experience in strikingly different ways, having the opportunity to factually see the perspective of others of a singular situation through VR may enable many more people to discover those perceptual differences. Second, the VR technology allows for simulating two perspectives (e.g., supervisor and subordinate) that may be very difficult for a singular person to experience in the real world in a short time span; participants in the workshops described above indeed reportedly were aware of how difficult it is to imagine the position or perspective of the other when considering the same situation. Third, VR technology allows for the design of common and interactive experiences wherein the VR user can actively partake in; examples include a child frequently requesting the attention of the VR user as the user needs to multitask between work and childcare, or the VR user being required to perform some type of action toward the child in the VR space. A highly-realistic VR experience with interactivity is expected to be memorable for users and to lead to behavioral changes after training, such as greater communication with and consideration of others.

Additionally, owing to the COVID-19 pandemic and the related acceleration of the introduction of remote work and online conferencing related to work in recent years, the frequency and quantity of face-to-face training decreased in many businesses. Thus, the expansion of VR-based training programs in organizations will require methods to enable people to participate in VR workshops from home or remote locations.