

Resonate: Reflections on implicit biases within the ISMRM

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Why does diversity and inclusiveness matter to ISMRM?

Science undeniably evolves through collaboration, transparency, and inclusiveness. Unconscious attitudes or stereotypes based on culture, personal experiences or institutional influences, i.e. *implicit bias*, can either positively or negatively inform our understanding, actions and decisions¹. Negative effects of implicit bias threaten the intrinsic worth of the scientific method and minimize progress in science. There is an ever-growing body of evidence illustrating that diverse research teams are more productive and make better group decisions and the use of diverse study populations lead to more impactful science². As an example of the value of the latter, LeWinn et al.³ recently challenged the - often implicit - assumption in population selection for neuroimaging studies that basic neural functions are not influenced by sample characteristics. LeWinn et al. used >1000 samples from the Pediatric Imaging, Neurocognition and Genetics study to show that age-related changes in brain structure are dependent on the composition of the sample, hereby highlighting the need for study populations to reflect target populations of interest to ensure generalizability of the study outcomes.

The International Society for Magnetic Resonance in Medicine (ISMRM) and its membership, like every other Science, Technology, Engineering, Maths (STEM) field, face challenges because of implicit bias. For example, although the overall membership of women in the ISMRM is slowly increasing (growing from 21% in 2008 to 27% in 2017), there remains a significant disparity in the representation of women among student members (35% female) as supposed to full members (21% female). This gap between young and senior female scientists is persistent across STEM fields⁴, and may be indicative of this disparity not resolving with more generations of women simply moving through the academic pipeline.

Moss-Racusin et al.⁴ suggest that interventions addressing gender bias might advance women's participation in STEM fields. In line with this body of literature, in 2013, the first annual "Women in MR forum" was organised at the annual meeting of the ISMRM. This event, arguably, marks the start of the society's efforts to openly address implicit bias towards gender. This year, we (the members *and* the society's leadership) extended the conversation at our annual scientific meeting by highlighting the further range of implicit biases that affect our science in magnetic resonance.

Resonate: A community-wide conversation on implicit bias, diversity and inclusivity in ISMRM.

Various events organised during the 26th annual meeting of the ISMRM in June of 2018 (Paris, France) were designed to identify and address implicit biases that the membership of our society are facing today. These events included 1) the inaugural Presidential Lecture delivered by Professor Curt Rice, summarizing current research on diversity in research organizations; 2) our Member-Initiated Symposium entitled *Resonate: A discussion on social biases within the ISMR*; 3) the Women in MR forum focusing on gender bias, and 4) an informal secret session on *Hacks for dealing with bias*. Implicit-bias-related issues raised by the ISMRM membership across these events include gender equality^{4,5}, international diversity⁵, LGBTQA in STEM⁶, accessibility for people with disabilities⁷, and other barriers to member participation, such as lack of childcare facilities at meetings and workshops. Certain demographic examples indicative of bias within the ISMRM were discussed – for example, the fact that, of 77 ISMRM Gold Medal awardees, only 4 have been women, and only 1 has been based outside North America or Europe.

Where do we go from here?

“There is nothing noble in being superior to some other man. The true nobility is being superior to your previous self.” - W.L. Sheldon (Ethical Addresses 1897).

Addressing implicit bias and minimising its negative effect on the conduct of science begins with the individual and must be supported by collective efforts of the group. At an individual level, it is important to acknowledge that no one is immune to unconscious bias, including bias against members of one's own group. This starts with being aware of one's own implicit bias^{1,2}, in particular when facing a critical decision such as selecting a study population, reviewing manuscripts and grants, or filling a vacancy within your research team or organization.

At the institutional level there is a range of strategies that can be used to mitigate negative effects of implicit bias, including some strategies for which evidence is emerging in the literature⁸⁻¹⁰. As an example, although opponents of hiring quota to reduce gender inequality often cite a perceived threat to meritocracy (for example, competent men being replaced by mediocre women), recent studies indicate that gender quota have an opposite effect (competent women replacing mediocre men). These studies showed that well executed quota systems motivate competent women to compete thereby increasing performance^{8,10}.

A softer approach to promoting diversity and ensuring all qualified individuals are included is to adopt wording in job advertisements and calls for nomination such that more applications are received from underrepresented groups. Wille et al.⁹ show that the wording of job

¹ The Harvard Implicit Association Tests. Available at <https://implicit.harvard.edu/implicit/>

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advertisements affects the application pool, by tapping into negative stereotypes in the self-perception in underrepresented groups.

It is worth considering what interventions could help to improve diversity within the ISMRM. For example, *nominations* for awards and committee memberships, could be subject to numerical quotas reflecting the demographics of ISMRM members, even if quotas are not applied for the appointments and awards themselves. Similarly, a systematic review of the wording used in both calls for nominations and the selection criteria for positions and awards within the society could reveal sources of implicit bias, including barriers against self-nomination for certain groups.

Following the 2018 annual meeting, the ISMRM ratified and appointed an Equity Officer of the Society, as a long-term commitment to minimising the negative effects of implicit bias on individual members and our community as a whole. The ISMRM Equity Officer will serve on the ISMRM Executive Committee, and will be responsible for establishing strategies and tracking performance for improving diversity and inclusion. In addition, an ISMRM Code of Conduct is under development. An open and ongoing dialogue between the ISMRM's leadership and all of the members will be vital to the success of this process. We invite all ISMRM members to continue this journey as we strive to look inwards to marshal all our disruptive innovative forces so we can come together to create new ways of seeing.

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