Use of the Implicit Association Test to Improve Diversity in Radiology

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DESCRIPTION OF THE PROBLEM

Radiology has a diversity problem. An often cited 2010 study comparing the diversity of radiology residents to the diversity of trainees in other specialties revealed that radiology ranked 17th out of 20 for its representation of women, and 20th out of 20 for its representation of minorities that are underrepresented in medicine [1]. The reasons for gender and racial disparity in radiology are likely multifactorial, and the radiology community has been active recently in trying to determine ways to increase interest in the field among underrepresented groups, particularly women [2-4]. However, relatively little attention has been paid to the potential role of bias in resident and faculty selection in radiology.

Beyond the complex issues that lead to smaller pools of interested applicants among these groups, women and applicants underrepresented in medicine to radiology may also be disadvantaged by implicit bias. In contrast to biases favoring one group over another that may be within an individual's awareness, implicit bias refers to underlying attitudes and stereotypes that are involuntary and subconscious. Everyone possesses such biases, even people with avowed commitments to impartiality or antibias efforts. A 2017 study showed that "health care professionals exhibit the same levels of implicit bias as the wider population" [5]. In an analysis of medical student performance evaluations from 6,000 medical students, white applicants were more likely to be described using the keywords "exceptional," "best," and "outstanding," whereas black applicants were more likely to be described as "competent." Female applicants were more frequently described as "caring," "compassionate," and "empathic." These differences remained significant after controlling for United States Medical Licensing Examination Step 1 scores [6].

The Implicit Association Test (IAT) is a tool developed at Harvard University that has subsequently been administered to millions of people over 20 years [7] and has been validated by numerous studies [8,9]. The IAT can expose unrecognized gender and racial stereotypes and can serve as a way of making interviewers more conscious of their biases. In a recent study of racial bias in medical school admissions performed at Ohio State, this tool demonstrated that all medical school admissions committee groups (male, female, faculty, students) showed significant preference for white applicants [10]. After committee members were made aware of their biases using the IAT, the school subsequently admitted the most diverse class in their history. We hypothesized that the IAT would be a useful tool in training radiology interviewers at our institution as well, to reduce the effects of implicit bias and improve diversity in our department.

WHAT WE DID

We invited 27 faculty members and residents participating in interviews or applicant screening (for residency or faculty positions) to take the IAT as preparation for an Unconscious Bias Training session. A total of 20 faculty and senior residents participate in residency candidate interviews. A much larger pool of faculty may occasionally participate in faculty candidate interviews. Participants were asked to confidentially take any two

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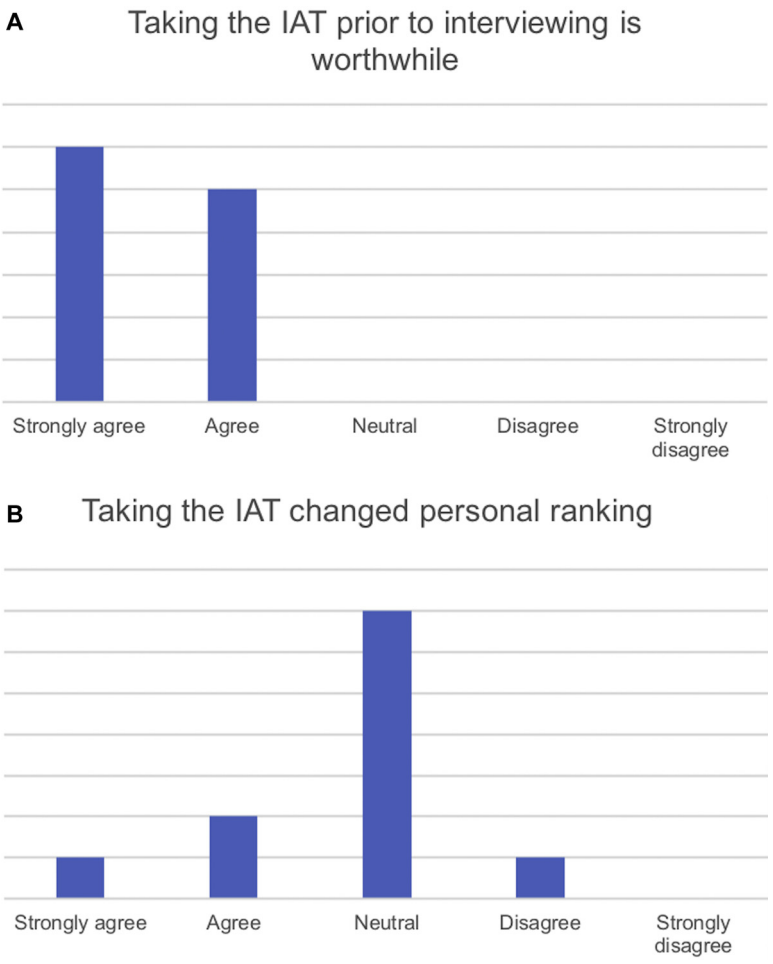

Fig 1. Participant views on taking the Implicit Association Test (IAT) as a part of Unconscious Bias Training in the preinterview setting. (A) Overall value of the IAT and (B) perceived impact on the respondents ranking of candidates.

IATs using the Harvard web-based interface [8]. Additional presession activities included review of campuswide diversity, equity, and inclusion best practices developed by the local Faculty Equity Advisors and Committee on the Status of Women. A 60-min training session was then conducted by the Director of the Multicultural Resource Center, in the University of California San Francisco Office of Diversity and Outreach, who further detailed the theory and science of unconscious bias and helped participants navigate a set of case examples targeted to academic medicine.

After the residency application cycle, those who completed the Unconscious Bias Training session were surveyed using an anonymous web-based Qualtrics survey (Qualtrics LLC, Provo, Utah) as to the utility of the IAT. There were eight survey questions, seven with 5-point Likert scale responses, and one free-text question for comments. The survey was designed based on the instrument used by Capers et al at Ohio State [10], which was edited by three faculty members at our institution with experience in survey design. (Full text of survey questions available online only.)

OUTCOMES

Fifteen of 27 (56%) invited faculty and residents in the department signed up for the first iteration of the Interviewer Unconscious Bias Training. Of those, 11 of 15 (73%) completed the survey. Of those 11, 10 (91%) were either surprised or slightly surprised by their IAT results. Only one reported that the results were what he or she expected. All respondents agreed or strongly agreed that the idea of a faculty or resident selection committee taking the IAT before beginning interviews is worthwhile and might be expected to have a positive outcome on reducing bias in the selection process. Likewise, all respondents agreed or strongly agreed that they were conscious of their individual IAT results when interviewing candidates for the faculty or residency. Only 3 of 11 (27%) agreed or strongly agreed that taking the IAT *changed* their personal ranking of applicants; 7 of 11 (64%) were neutral; and 1 of 11 (9%) disagreed. However, all agreed or strongly agreed that the IAT or the implicit bias exercise before this interview cycle likely led to a reduction of bias in the evaluation of candidates and that the IAT or implicit bias exercise was a worthwhile activity for selection committees that should be repeated annually or biannually (Fig. 1). Ten of the 11 (91%) desired that the IAT and implicit bias exercise

should be accompanied by a workshop on strategies to neutralize unconscious bias. Only one disagreed that a workshop was necessary. Free-text comments ranged from being skeptical of the IAT results ("uncertain of its reliability") to suggesting that the activity should be "mandatory for all interviewers."

Overall, in our initial experience using the IAT to help train resident and faculty interviewers about unconscious bias, we found that everyone who underwent the tests and training found the experience worthwhile, believed that it would decrease bias in the candidate selection process, and felt it made them conscious of their biases during the interview process. Respondents were enthusiastic about the activity and felt that the training should be repeated annually or biannually.

Although responses to the testing and training were overwhelmingly positive, one respondent expressed doubts about the accuracy of the IAT. It is not unusual for those who take the IAT to have conflicting feelings about their results. Studies have, in fact, shown that taking the IAT alone, without associated training to neutralize implicit bias, can actually exacerbate previously hidden biases [11]. The Project Implicit website actually warns users, "If you are unprepared to encounter interpretations that you might find objectionable, please do not proceed further" [7]. Additionally, although all reported that the intervention made them more conscious of their biases during the interview process, only a minority of respondents stated that it actually changed their personal ranking of applicants. Most responses were neutral as to whether their rankings were affected. There are multiple possible explanations for this finding. For example, individual interviewers may not have had their particular biases challenged by the specific candidates they interviewed. Interviewers were asked to take at least two IATs of their choice. There are 14 possible choices online that address different biases encompassing gender, race, religion, age, weight, sexuality disability, and even politics. As interviewers' results were kept private, there is no way to know which biases were confronted. Also, this study represents our first iteration of this training, and as such, the sample size of interviewers was small. Participation in the program will likely need to be more widespread and tracked over several years to identify measurable changes in the ranking of underrepresented candidates. Additionally, microinterventions like IAT participation can only be expected to produce microresults, and although necessary, are not the sole or definitive solutions to lesser diversity in the radiological professions.

Nevertheless, participants found the training valuable and believed it would impact candidate selection. We believe other radiology programs could also begin to benefit from a similar microintervention to help address the diversity gap in our field. Our department found it simple to incorporate this training into our interview process because the IAT is readily available online as a free resource [7]. Further development of standardized materials to teach strategies to neutralize unconscious bias would accelerate adoption of these types of strategies and increase access to such implicit bias training programs.

ADDITIONAL RESOURCES

Additional resources can be found online at: https://doi.org/10.1016/j.jacr.2019.01.010.

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