

# Rethink your gender attitudes

Unconscious biases are a roadblock for gender equality in science.

“It happened again — another major theoretical chemistry conference features an all-male program” says a recent open letter authored by three renowned theoretical chemists and materials scientists<sup>1</sup>. Emily Carter, Laura Gagliardi and Anna Krylov publically called for protest against a preliminary speaker line-up for the International Quantum Chemistry Conference 2015 in Beijing: there was not a single woman on the published list. Their cause got overwhelming public support<sup>2,3</sup>. In the end, the conference organizers did their homework, and now the finalized line-up of invited speakers roughly reflects the gender ratio in the field.

Fortunately, some bigger society meetings are more careful in tackling gender issues. The Materials Research Society conferences, for example, routinely offer childcare grants and networking breakfasts for women — in addition to inviting a fair share of female speakers. Indeed, one should certainly not insinuate that women get omitted from meetings with all-male programmes on purpose. Most situations in which women are marginalized do not display signs of open, intentional discrimination. But the fact that all-male speaker lists still do not immediately look strange to all of us suggests a form of discrimination that is far more diffuse and thus harder to combat than open sexism: unconscious gender bias.

Today, intentional gender discrimination in science is considered utterly unacceptable almost everywhere. Most researchers, men and women alike, strive to be fair and self-reflective, and try to judge PhD applicants and peers by their competence only. Consequently, they don't expect sexism to influence their own actions — such bias only happens in the minds of others. But this is a confidence trap: no matter how self-reflective we are, our thinking has been shaped by exposure to the gender roles in our culture<sup>4</sup>. On average, we consider women more likeable but less competent in areas such as mathematics and physics that are characterized as being male<sup>5</sup>. These gender stereotypes that we thought we had long overcome lead to unconscious gender bias.

How this bias may influence everyday decisions, is demonstrated in a recent study by Corinne Moss-Racusin and colleagues<sup>6</sup>. Over 100 faculty members of US science departments received an application from

an undergraduate student for a position as a laboratory manager. The CVs were identical except for the gender of the fictitious student: half of the applicants were male and the other half female. The potential employability of the applicant was assessed; the faculty rated the male applicants to be significantly more competent and hireable. Also the salaries that they were willing to offer the male applicants were significantly higher than for their female counterparts. Interestingly, this outcome remained unaffected by the gender of the faculty member<sup>7</sup>. Using a well-validated tool to test pre-existing and unintentional sexism, the authors were able to show that it was indeed unconscious gender bias that prevents a more favourable evaluation of the female student.

Another study published earlier this year by Ernesto Reuben and colleagues shows a similar effect<sup>8</sup>. In an experiment involving a simulated job-market, applicants were to be hired for a mathematical task in which men and women eventually showed the same performance. When the only information given to the potential employers was the physical appearance of the candidate, men were twice as likely to be hired than women. Although information on the applicant's past performance mitigated the bias, it did not eliminate it completely. Hence, in this experiment employers took inferior decisions because of unconscious gender bias, which provides an important lesson to all researchers: unconsciously discounting the abilities of female scientists is not only egregiously unfair — you might also miss out on great collaborations for irrational reasons.

Unconscious biases are powerful, and it is unlikely that we will be able to shed them soon. But we would gain a lot if we tried hard to identify where unconscious gender biases compromise our everyday objectiveness. Whether and where biases are so strong that institutionalized measures such as fixed quotas are reasonable is another important matter for discussion<sup>9</sup>.

Women who want to get ahead do not have time for the world to change, and are in need of reliable strategies to succeed today in spite of their gender. The male strategy of getting ahead is nicely demonstrated in a separate step of Reuben and colleagues' experiment: boasting. When applicants were asked to predict their own performance in the mathematical task, men overestimated



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their abilities and hence got employed more often. But advising women to be more boastful is a double-edged sword. Women who self-promote as aggressively as men often experience backlash because this behaviour challenges our internal gender stereotypes<sup>10</sup>. A solution to this dilemma is for women to display male self-promotion attitudes in small doses, especially when it is crucial for their career<sup>11</sup>.

This is easier said than done. How such a balancing act can be achieved is best learned from women who have already successfully mastered it. The organizers of the open letter denouncing all-male conference programmes have compiled a list of such role models for the younger generations into a directory of women in theoretical chemistry<sup>12</sup>. Making competent and successful female scientists more visible will help to reshape our unconscious gender attitudes. □

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