Does Gender Bias Influence Awards Given by Societies?

PAGES 421–422

AGU is a participant in a U.S. National Science Foundation (NSF)–funded project called Advancing Ways of Awarding Recognition in Disciplinary Societies (AWARDS), which seeks to examine whether gender bias affects selection of recipients of society awards. AGU is interested in learning why there is a higher proportion of female recipients of service and education awards over the past 2 decades. Combined with a lower rate of receipt of research awards, these results suggest that implicit (subconscious) bias in favor of male candidates still influences awardee selection.

Six other professional societies (American Chemical Society, American Mathematical Society, American Society of Anesthesiologists, Mathematical Association of America, Society for Neuroscience, and Society for Industrial and Applied Mathematics) are participating in the project. Volunteers from each participant society attended an Association for Women in Science (AWIS)–sponsored workshop in May 2010 to examine data and review literature on best practices for fair selection of society awardees. A draft proposal for implementing these practices will be brought before the AGU Council and the Honors and Recognition Committee at their upcoming meetings.

While the data are interesting, their implications are manifold. Not only can this study help AGU leadership ensure that awards are given in a manner that does not subconsciously favor one gender over the other, but also results can guide AGU members who nominate candidates for awards. Further, AGU members involved with the leadership of their institutions or of other societies may find results useful for averting bias in their own award selections. Collecting the data is the first step in determining whether bias exists.

The Data: Categories of Awards With Recipients by Gender

There are eight AGU medals awarded to senior scientists (e.g., the Harry Hess, Inge Lehmann, and William Bowie medals), each of which has one awardee per year. There were no women recipients of any of these medals from 1991 to 2000; there were eight (11%) from 2001 to 2010 (Table 1). Ten percent of Fellows from 1997 to 2000 were women; 11% of Fellows from 2001 to 2010 were women (Figure 1). Fellow status is awarded when a senior AGU member receives a medal, if he or she is not already a Fellow.

Are these numbers high or low? The answer depends on the comparison population. Women were 15–20% of AGU membership from 1999 to 2010. Compared to membership, the proportion of women receiving these awards appears low. But medals and Fellow status are generally conferred upon more senior scientists. During this decade, women composed 5–9% of full professors at research-intensive universities (Figure 1). Compared to full professors, 11% is about right, if not on the high side.

There is a higher proportion of women recipients of early-career awards: 18% from 1991 to 2001 and 27% from 2001 to 2010 (Table 1). By contrast, women made up 25–36% of Ph.D.s and 24%–30% of postdocs from 2001 to 2010 [*NSF,* 2011a, 2011b]. Compared to the values of the later years of those decades, the numbers of awards appear to be low.

Women received a higher proportion of service and education awards: 22% from 1991 to 2010 (Table 1). The twofold difference between receipt of scholarly awards by senior scientists versus service and teaching awards is not unique to AGU; every scientific society in the AWARDS study had twice as many women receiving awards for service, teaching, mentoring, and communication as those receiving awards that recognize senior scholarship and research.

Implications

Where does bias exist: in those who nominate candidates for awards or in how awardees are selected? Data on the numbers and gender of people nominated for awards are lacking—these data were simply not collected prior to AGU's participation in this study. In 2010, when the data began to be collected, a total of four women were nominated for two of the seven medals awarded that year that went to senior scientists. On average, five people were nominated for each of these awards, and 7% of the nominees were women. Women made up 20% of the nominees for one early-career medal; a woman won that medal, one of three that were awarded in 2010. Women were nominated for no other early- or advanced-career awards or medals. Women composed 37% of the nominees for service and education awards. The low nomination rate for women for research awards suggests that geoscientists overlook their female colleagues when it comes to nominating their peers for disciplinary awards but are ready to nominate women for the roles that traditional stereotypes hold as more applicable to women: service and education.

The difference between service and education awards and research awards suggests that unintended associations (implicit biases) may be influencing awardee selection. These arise from subconscious efforts to simplify sensory inputs by creating mental shortcuts. An example of a mental shortcut is "cloning," replicating oneself by hiring or, in this case, nominating and positively evaluating, someone with attributes or background similar to one's own. Another is "snap judgments," making decisions based on one or two lines of evidence rather than on the entire dossier, such as "he went to my alma mater, so he must be good" or "he worked with my advisor/colleague/coauthor," and then ignoring or downplaying the rest of the dossier (see J. Moody, "Rising above cognitive errors: Guidelines to improve faculty searches, evaluations, and decision-making," 2010, at http://www.diversityoncampus.com/id13.html).

The impact of such mental shortcuts is demonstrated in the literature on implicit bias. For example, in a recent study, both men and women evaluators were presented with identical curriculum vitae, except for the first name—one third had recognizably female names, one third had male names, and one third had initials instead of given names; most preferred the male candidates [*Steinpreis et al.,* 1999], suggesting that men subconsciously fit a typical snapshot mental image of the appropriate person for the job. Both men and women also tend to write letters of recommendation differently depending on the gender of the candidate: letters written for women tend to be shorter

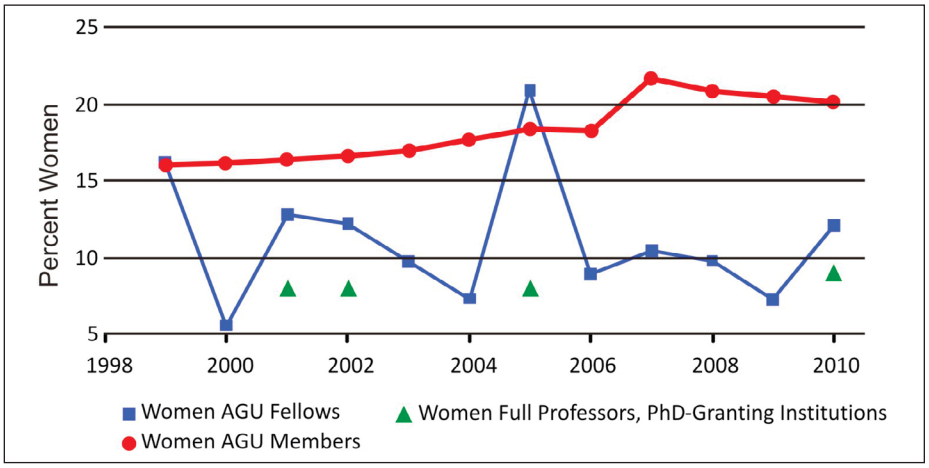

*Fig. 1. Proportion of AGU members and Fellows who are women. Proportion of women at Ph.D.-granting institutions [*Holmes et al., *2008] provided for comparison to Fellow recipients.*

than men's and have more references to personal traits and fewer references to professional traits [e.g., *Trix and Psenka,* 2003]. The bias that makes us think of professional traits in male candidates and personal traits in female candidates makes letters for women weaker and women therefore less appealing as candidates.

AWARDS Recommendations

Webcasts summarizing research on implicit bias and strategies on how to minimize its impact are now available to AGU members, and members of awards selection committees are strongly encouraged to view them (see http://www.awis.org/displaycommon.cfm?an=1&subarticlenbr=424).

Strategies to reduce the impact of implicit bias or associations on candidate evaluation include the following:

- Provide checklists and structured evaluation forms for nominators (rubrics) instead of letters of nomination, which tend to be subjective and may be gender-biased. Criteria should focus on accomplishments.
- Create a clear set of criteria for the most worthy awardee before committees meet.
- Empower the Honors and Recognition Committee with broad oversight of award committees.
- Provide the committee members with a history of the award's nominees and winners broken down by gender and race (where possible).
- Recognize the impact of implicit bias and discuss it with all committee members before discussing applicants.
- Increase the number of women nominated for society awards. In 2010, women received 2 of 19 awards and medals. Of 163 nominees, 33 were women. Most of these nominations (23) were for service and education awards; only four were for senior-level awards and medals. The rest were for early-career awards.

Table 1. Recipients of AGU Medals and Awards in the Past 2 Decades[a]

	1991–2000		2001–2010	
	Number of Awardees	Percent Women	Number of Awardees	Percent Women
Scholarly awards (without medals)	41	7	43	12
Medals	67	0	74	11
AGU Fellows	143[b]	10[b]	462	11
Early career[c]	74	18	103	27
Service/ education	9	22	18	22

[a]Data are grouped by decade to make more meaningful the small numbers of awards given annually.
[b]For 1997–2000 only (1991–1996 data not found).
[c]Includes section and focus group awards.

Ellen Druffel examined gender distribution among AGU Fellows in an article published in *Eos* about 2 decades ago [*Druffel,* 1994]. Her findings and recommendations ring true even now. She urged AGU members to nominate worthy women, use genderless language for the nomination process, have AGU prioritize gender equity in awards, and increase the numbers and visibility of women in AGU. Today, with enhanced understanding of the evaluation process and new data, it is hoped that the next decade will see substantive progress toward rewarding women for their accomplishments in Earth science research in accordance with their representation in different career stages.

References

Druffel, E. R. M. (1994), Looking at gender distribution among AGU Fellows, *Eos Trans. AGU, 75*(37), 429, doi:10.1029/94EO01062.

Holmes, M. A., S. O'Connell, C. Frey, and L. Ongley (2008), Gender imbalance in U.S. geoscience academia, *Nat. Geosci., 1*(2), 79–82, doi:10.1038/ngeo113. [Available at http://www.nature.com/ngeo/journal/v1/n2/abs/ngeo113.html.]

National Science Foundation (2011a), Graduate students and postdoctorates in science and engineering: Fall 2008—Detailed statistical tables, *Rep. NSF 11-311*, Natl. Cent. for Sci. and Eng. Stat., Arlington, Va. [Available at http://www.nsf.gov/statistics/nsf11311/.]

National Science Foundation (2011b), Women, minorities, and persons with disabilities in science and engineering, *Rep. NSF 11-309*, Div. of Sci. Resour. Stat., Arlington, Va. [Available at http://www.nsf.gov/statistics/wmpd/.]

Steinpreis, R. E., K. A. Anders, and D. Ritzke (1999), The impact of gender on the review of the curricula vitae of job applicants and tenure candidates: A national empirical study, *Sex Roles, 41*, 509–528.

Trix, F., and C. Psenka (2003), Exploring the color of glass: Letters of recommendation for female and male medical faculty, *Discourse Soc., 14*(2), 191–220, doi:10.1177/0957926503014002277.

—Mary Anne Holmes, University of Nebraska–Lincoln; E-mail: mholmes2@unl.edu; Pranoti Asher, AGU; John Farrington, University of Massachusetts Dartmouth; Rana Fine, Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, Miami, Fla.; Margaret S. Leinen, Florida Atlantic University, Boca Raton; and Phoebe LeBoy, Past President, Association for Women in Science