

## **ADVANCE-PAID Project Outcome Report**

Your report must be between 200 and 800 words.

- be written for the general public
- describe the project outcomes or findings that address the intellectual merit and broader impacts of your work as defined in the MSF merit review criteria
- Briefly summarize the outcomes of your award (200-800 words) covering the entire life of the award.

You have the option of including up to 6 images using the image upload tool.

Word Count: 628

Gender biases in the workplace are not new. In the past, the “glass ceiling” had been created and maintained by men who explicitly expressed sexist attitudes. Even with the social disdain that society holds for overt sexism, the glass ceiling is still maintained in the U.S. today. This project posited that the glass ceiling that women face within the academic workplace is caused by subtle gender biases. It is because subtle gender biases indirectly impacts women’s promotion and tenure that it is more difficult to pinpoint the social conditions that make it difficult for women to meet tenure and promotion standards and requirements (e.g., more published research, more grant funding). Subtle gender biases are not just annoyances or uncomfortable interactions; they cause real harm to women’s career advancement. Unlike overt sexism that may cause male leaders to explicitly exclude women from consideration in promotion decisions, subtle gender biases often operate at a much more invisible and indirect level.

The major goal of the project was to develop the Subtle Gender Bias Index (SGBI). To date, no measure exists to assess subtle gender biases within the academic setting. The current study extended the field’s understanding of subtle gender bias by producing a subtle gender biases index that is relevant to women within academic settings, especially within STEM fields. Most importantly, this project produced a measure that assesses academic women’s exposure to subtle gender biases within their academic workplace. The measure allows us to better understand how academic STEM women’s experience differs from non-STEM women’s experiences. This mixed method project involved two major steps: (1) in-depth interviews and (2) Index development.

Step 1 involved the qualitative analysis of our original 19 one-on-one pilot interviews of academic STEM women. The initial set of items for the Subtle Gender Bias Index was derived from content analysis of these 19 interviews. An expert panel of consultants reviewed items and provided feedback to refine items. A Read Aloud protocol was used with four STEM women as a final step to revise and refine index items. Participants shared their interpretation of the items to ensure that it matched with the research team’s intention. Confusing items were revised and duplicate items were removed.

Analyses involved a team of four coders and a graduate research assistant. All members on the analysis team were trained to code for subtle biases, including microaggressions and micro-inequities. After reaching an acceptable level of inter-rater reliability on the first 2 interviews, coders analyzed interviews in sets of 2. Team members coded the transcribed interviews for the purpose of extracting biases and micro-inequities for index item development. For example, participants report biases in multiple areas of their life and at many different developmental

stages in their career from early childhood through to the present day. Team coders identified specific biases that constitute hostile as well as supportive department cultures and interpersonal relationships (e.g., mentors, advisors, supervisors, colleagues).

Items were developed based on the biases identified within each interview. Items were grouped and refined in multiple phases to ensure consistency in wording and to remove redundant items. This process resulted in a list of approximately 200 items. A panel of expert consultants who are faculty associates at the UMass Lowell Center for Women and Work and UMass Worcester Medical School reviewed items. Experts represented various disciplines including psychology, workplace and environment, nursing, and sociology.

In Step 2, the items developed through our qualitative process were pilot tested using quantitative methods. We collected responses from academic women across the U.S. and across academic disciplines. We quantitatively refined the items using exploratory factor analysis and confirmatory factor analysis. Through extensive qualitative and quantitative techniques, we have finalized the 16-item Subtle Gender Bias Index to be used with academic women across disciplines using a likert response scale.