ADVANCE Final Report (2016)

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Year 4 (2016)

List the major goals of the project

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 extends on 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 the 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. The project involved 2 major steps: (1) in-depth interviews and (2) Index development.

In this last no-cost extension year, the items developed through our qualitative process were pilot tested using quantitative methods. We collected responses from academic women across the country 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.

What was accomplished under these goals (you must provide information for at least one of the 4 categories below)? 1) major activities; 2) specific objectives; 3) significant results; and 4) key outcomes or other achievements.

1) Using interviews of 19 STEM women, we conducted qualitative content analyses to identify moments when women experienced subtle gender biases in their academic workplace. Using a split sample approach, we statistically tested our 111 item Subtle Gender Bias Index, refined the items using both statistical methods and consultation with experts in subtle biases. This method resulted in a final 16-item Subtle Gender Bias Index.

2) Using the approach detailed below, we refined the items to 16 items, including three major categories of biases.

Factor 1 – Bias & Discrimination (6 Items)
Item
At my institution, women are evaluated more harshly for tenure and promotion compared to men.
I have seen male colleagues jump in when a woman is speaking and take over the conversation.
Compared to female faculty members, male faculty members receive more respect from other faculty.
I have been "talked down to" by faculty/staff at my workplace (written or orally).
People see ambitiousness differently for men and women (i.e., "strong-minded" vs. "bossy").

People are labeled troublemakers for reporting differential treatment.
FACTOR 2 – Resources & Relationships (5 items)
I have colleagues who want to help me achieve my career goals.
Colleagues in my workplace advocate for my research and scholarship needs.
I have good "role models" for doing research in my field.
I have a mentor who is in a senior leadership position.
I have women faculty colleagues to whom I can turn to for help in balancing my home and professional lives.
FACTOR 3 – Institutional (5 items)
There are opportunities to attend skill-building workshops (e.g., grant writing, teaching).
My institution provides supports for balancing work and family demands.
There is at least one leader at my institution who is a champion for supporting women faculty.
My institution supports policies that ensure everyone is treated fairly regardless of race, gender, and sexual orientation.
My institution has maternity leave policies that offer women the ability to postpone their tenure clock.

The index shows concurrent validity through the 3 SGBI subscales positive correlation with both of the Schedule of Sexist Events Inventory subscales. We are also able to show discriminate validity because all 3 subscales are uncorrelated with the Ambivalent Sexism Index (ASI) benevolent sexism; factor 2 also is uncorrelated with ASI hostile sexism, and the other 2 factors are weakly negatively correlated with ASI hostile sexism.

Statistical Refinement Steps

Exploratory factor analysis (total N in resulting dataset = 882) using tenure track, tenured, and equivalent status women across academic disciplines

Step 1: Based on scree plot, tested 3 and 4 factor models

Step 2: Separately for 3-factor and 4-factor solution, identify items with low (<0.40) communalities, omit from subsequent analyses; also omit items loading (0.40+) on 2 factors

Step 3: Run CFA on 2nd half

Step 4: Repeated steps 1 & 2 for full sample

*** What opportunities for training and professional development has the project provided? Describe opportunities for training and professional development provided to anyone who worked on the project or anyone who was involved in the activities supported by the project. "Training" activities are those in which individuals with advanced professional skills and experience assist others in attaining greater proficiency. If the research is not intended to provide training and professional development opportunities or there is nothing significant to report during this reporting period, please check "Nothing to Report" if applicable.**

Our Interview Analysis Team has continued to receive training on one type of qualitative data analysis Grounded Theory Analysis. Our research assistant has received training on qualitative data analysis, development in understanding subtle gender biases as a field of study, and general research activities.

*** How have the results been disseminated to communities of interest? Describe how the results have been disseminated to communities of interest. Include any outreach activities that have been undertaken to reach members of communities who are not usually aware of these research activities, for the purpose of enhancing public understanding and increasing interest in learning and careers in science, technology, and the humanities.**

A poster was presented in June 2015 at the NSF ADVANCE Workshop in Alexandria, Virginia. We shared information about the grant project and discussed biases that exist for women in the academy. Important networking occurred during the workshop and we have continued to utilize these connections following the workshop. Preliminary index items were disseminated to institutions interested in considering inclusion of the SGBI in current and future assessment and intervention work.

At the 2016 NSF-AWIS Conference, we shared the results from a survey done at UMass Lowell. The survey utilized a modified version of the SGBI that allowed for the inclusion of men in the sample (i.e., assessing both their own experience and their observations of bias against women).

*** What do you plan to do during the next reporting period to accomplish the goals?**

This is the last reporting period for this ADVANCE PAID grant. However, we will continue our efforts to disseminate findings from this project including submitting a psychometric paper for publication, presenting the measure at a national conference. UMass Lowell will also continue to use the SGBI for semi-annual survey feedback cycles with both departments and colleges. The Center for Women and Work (CWW) will also produce factsheets on Subtle Gender Bias that will point interested folks to use the SGBI. Factsheets will be published on the CWW website, professional listserves, and social media outlets.

*** What is the impact on the development of the principal discipline(s) of the project? Describe how findings, results, techniques that were developed or extended, or other products from the project made an impact or are likely to make an impact on the base of knowledge, theory, and research and/or pedagogical methods in the principal disciplinary field(s) of the project.**

Subtle biases have long been known to cause women and other minorities to under perform to a greater extent than more overt blatant biases (i.e., sexism). However, no index has been created that allows researchers and organizations to assess the extent to which these biases exist within a setting or for individual people. The development of the Subtle Gender Biases Index allows researchers and organizations to finally assess these settings. This will ultimately facilitate more effective prevention and intervention programming.

What is the impact on other disciplines?

Subtle biases exist in all disciplines. This project includes women from all disciplines. Therefore, other disciplines will also be able to understand the biases that women in their discipline experience. Psychological measures are regularly used by other disciplines and in other contexts.

What is the impact on the development of human resources?

The development of human resources in science, engineering, and technology is one of the primary goals of the current project. Findings from our project and the resulting measure will allow these fields to better understand what subtle biases exist and how they may impact performance and productivity for women.

What is the impact on physical resources that form infrastructure?

Nothing to report

What is the impact on the institutional resources that form infrastructure?

The resulting measure from this project allows institutions to assess the current state of exposure to subtle biases for women. This allows institutions to target those areas that require more institutional resources. In fact, the University of Massachusetts Lowell has plans to utilize the SGBI to generate feedback for all academic units on a bi-annual basis.

What is the impact on the informational resources that form infrastructure?

The resulting measure allows institutions to assess and possibly unveil gaps and breaks in their flow of information and information resources more generally. Improvements can then target these specific areas.

What is the impact on technology transfer?

The resulting measure will be publically available to all institutions and researchers interested in using the measure.

What is the impact to society beyond science and technology?

The primary goal of the project and the resulting measure is to better understand and to ultimately improve the academic setting for women in the STEM fields. However, betterment of these contexts will ultimately result in more and possibly better research from female scholars broadly.

Websites

Title: UMass Lowell ADVANCE Website

URL: https://www.uml.edu/Research/ADVANCE/default.aspx

Short Description : This site serves as the project website. It provides information for potential study participants and others who are interested in learning more about the project.