Cover

Federal Agency and Organization Element to Which Report is Submitted:

4900

Federal Grant or Other Identifying Number Assigned by Agency:

1209174

Project Title:

Collaborative Research: Institutional Networks and Continuous Learning to UnDo Effects of Micro-inequities on Women (INCLUDE-Women)

PD/PI Name:

- **Ivy Ho, Principal Investigator**
- **Meg Bond, Co-Principal Investigator**
- **Julie Chen, Co-Principal Investigator**
- **Paula Rayman, Co-Principal Investigator**

Recipient Organization:

University of Massachusetts Lowell

Project/Grant Period:

09/15/2012 - 08/31/2016

Reporting Period:

09/01/2014 - 08/31/2015

Submitting Official (if other than PD\PI):

N/A

Submission Date:

N/A

Signature of Submitting Official (signature shall be submitted in accordance with agency specific instructions)

N/A

Accomplishments

* What are the major goals of the project?

The major goal of the project is 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 (or within STEM fields if data suggests it is more specific). Most importantly, this project will produce a measure that will assess academic women's exposure to subtle gender biases within their academic workplace. The measure will allow us to better understand how academic STEM women's experience differ from non-STEM women's experiences. The project is split into 2 major steps: (1) in-depth interviews and (2) Index development.

Currently, we are approximately 90% complete with Step 2 of the project. More specifically, we completed the next major step in the development of the Subtle Gender Bias Index. 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.

* What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?

Major Activities:

> 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.

Specific Objectives:
Significant Results:

> Using the approach detailed below, we refined the items to 68 items across three factors (examples provided for each):

> 1. Workplace Gender Bias

>> a) I feel that I need to constantly prove to others that I am competent in my work.

>> b) At times, I receive unwanted comments about my looks.

>> c) There are times when male faculty members continue to meet after the women have left the room.

> 2. Relationship & Resource Biases

a) I receive informal mentoring from colleagues.

b) I receive one-on-one formal mentoring.

c) I receive positive feedback about my abilities from colleagues.

3. Institutional Gender Biases

a) My university is attuned to women faculty's professional needs for success.

b) There is at least one leader at my institution who is a champion for supporting women faculty.

c) My institution provides supports for balancing work and family demands.

Statistical analyses currently show strong Cronbach's alpha coefficients for each of the 3-factors above 0.80. As expected, our fit indices are not ideal. We expect the fit indices to improve significantly when we have completed the item trimming process to obtain an index of approximately 40 items.

In these preliminary analyses, we are able to show 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

Key outcomes or Other achievements:

* What opportunities for training and professional development has the project provided?

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?

A poster and symposium was presented during June 2015 at the NSF ADVANCE Workshop in Baltimore, MD. 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.

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

In the next reporting period, we plan to complete the Subtle Gender Bias Index.   Specifically, we will continue to use our quantitative and qualitative approach to refine the index to include no more than 40 items.

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Products

Books

Book Chapters

Conference Papers and Presentations

Inventions

Journals

Licenses

Other Products

Other Publications

Patents

Technologies or Techniques

Thesis/Dissertations

Websites

- *UMass Lowell ADVANCE Website*
  https://www.uml.edu/Research/ADVANCE

  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.

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Participants/Organizations

What individuals have worked on the project?

Ho, Ivy	PD/PI
Bond, Meg	Co PD/PI
Chen, Julie	Co PD/PI
Rayman, Paula	Co PD/PI
Tran, Nellie	Faculty
Boyer, Darcy	Other Professional
Paterson, Susan	Other Professional
Dean, Brita	Staff Scientist (doctoral level)
Smith, Sable	Graduate Student (research assistant)

Full details of individuals who have worked on the project:

Ivy Ho
Email: Ivy_Ho@uml.edu

Most Senior Project Role: PD/PI
Nearest Person Month Worked: 1
Contribution to the Project: Participated in development of SGBI
Funding Support: University faculty workload time
International Collaboration: No
International Travel: No

Meg Bond
Email: Meg_Bond@uml.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 1
Contribution to the Project: Coordinated overall project effort, led regular meetings, provided input to SGBI development
Funding Support: University faculty workload
International Collaboration: No
International Travel: No

Julie Chen
Email: julie_chen@uml.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 1
Contribution to the Project: Served as liaison to upper administration, provided input on SGBI development and future applica
Funding Support: University
International Collaboration: No
International Travel: No

Paula Rayman
Email: Paula_Rayman@uml.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 1
Contribution to the Project: Made connections with other universities and related partners for survey, provided relevant histori
Funding Support: University faculty workload
International Collaboration: No
International Travel: No

Nellie Tran
Email: ntran@mail.sdsu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Dr. Tran was the former PI on this grant before she moved to San Diego State. She has continued
development
Funding Support: University faculty time

International Collaboration: No
International Travel: No

Darcy Boyer
Email: darcy_boyer@uml.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Ms. Boyer provides administrative support for the research team. She creates and ensures the proc
Funding Support: UML College of Fine Arts, Humanities, & Social Sciences
International Collaboration: No
International Travel: No

Susan Paterson
Email: susan_paterson@uml.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Working to develop the recruitment strategy and oversee the pilot study's recruitment efforts to en
Funding Support: n/a
International Collaboration: No
International Travel: No

Brita Dean
Email: baxley99@aol.com
Most Senior Project Role: Staff Scientist (doctoral level)
Nearest Person Month Worked: 2
Contribution to the Project: Dr. Dean is our project manager. She oversees the project and works to ensure that we meet our de
Funding Support: n/a
International Collaboration: No
International Travel: No

Sable Smith
Email: sable_smith@hotmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 2
Contribution to the Project: Ms. Smith provides support to the Interview Analysis Team. She coordinates the data analysis that
of the coding and analysis work along side the team.
Funding Support: PI discretionary funds
International Collaboration: No
International Travel: No

What other organizations have been involved as partners?

[Central Massachusetts Area Health Education Center](#)	Other Nonprofits
[University of Massachusetts Worcester](#)	Academic Institutio

Full details of organizations that have been involved as partners:

Central Massachusetts Area Health Education Center
Organization Type: Other Nonprofits
Organization Location: Worcester, MA
Partner's Contribution to the Project:
Other: Interview Services
More Detail on Partner and Contribution: CMAHEC recruits and conducts interviews for our project. They also facilitate the

University of Massachusetts Worcester
Organization Type: Academic Institution
Organization Location: Worcester, MA
Partner's Contribution to the Project:
Financial support
In-Kind Support
Facilities
Collaborative Research
Personnel Exchanges
More Detail on Partner and Contribution: UMass Worcester is our collaborators. The progress thus far has been shared with t

What other collaborators or contacts have been involved?

Nothing to report

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Impacts

What is the impact on the development of the principal discipline(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 will allow 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 institutional resources that form infrastructure?

The resulting measure from this project will allow institutions to assess the current state of exposure to subtle biases for women. This will allow institutions to target those areas that require more institutional resources.

What is the impact on information resources that form infrastructure?

The resulting measure will allow 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 publicly available to all institutions and researchers interested in using the measure.

What is the impact on 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.

Changes/Problems

Changes in approach and reason for change

Nothing to report.

Actual or Anticipated problems or delays and actions or plans to resolve them

There was a slight delay in recruiting the number of desired participants in the survey.   We now have sufficient results for the analysis. A no-cost extension was requested and granted to complete the analysis.

Changes that have a significant impact on expenditures

Nothing to report.

Significant changes in use or care of human subjects

Nothing to report.

Significant changes in use or care of vertebrate animals

Nothing to report.

Significant changes in use or care of biohazards

Nothing to report.

Special Requirements

Responses to any special reporting require