

# **An Empirical Analysis of Discrimination/Harassment and Perceptions of Underrepresentation Among Students in STEM Fields\***

Danielle Saj, Tracey Peter, Annemieke Farenhorst  
University of Manitoba

**Summary** Gender bias in science has been a longstanding issue. Women are typically underrepresented in enrollment and retention in Science, Technology, Engineering, and Mathematics (STEM) university programs. Incidents of discrimination or harassment and perceptions of underrepresentation continue to promote gender inequality within these fields.

## **1. Relevance**

Recent research by Malcom and Feder (2016) suggest that in addition to students' prior notions about STEM fields or the ways they believe they are perceived by their peers, the sense of community within their program is an important factor that influences retention and achievement. Robnett (2016) argues that in order to reduce the negative effects of gender bias, supportive networks can be created through various initiatives targeting women studying in STEM fields.

## **2. Aims and Objectives**

Building on the literature, our work is guided by the following two research questions: (1) Are there differences in terms of the amount of discrimination and harassment experienced by undergraduate and graduate students?; and (2) Are there differences in perceptions of underrepresentation amongst students in STEM programs? In regard to our first research question, we aim to gain a more complete understanding of factors that influence experiences of discrimination and harassment, while also investigating trends among students in reporting these incidents. In regard to our second research question, we aim to identify factors that influence perceptions of underrepresentation and analyze the impact these perceptions have on students.

## **3. Methods**

Our sample is composed of male and female undergraduate (n=380) and graduate students (n=159) at the University of Manitoba with a targeted oversampling framework of students within STEM faculties. Both surveys include questions that discuss: choice to pursue current program, career path, equity programs, underrepresentation, discrimination and harassment, and demographic information.

## **4. Results**

Preliminary findings are as follows, according to each research question. Regarding our first research question, 19% of female STEM students reported experiencing discrimination, compared to 16% of non-STEM students, and 1 in 10 STEM female students (vs. 9% of non-STEM female students) indicated that they have experienced harassment. Results also suggest that female students who are additionally marginalized due to their racialized identity are even more likely to report experiencing both discrimination and harassment. Regarding our second research question, among female respondents, 20% reported feeling underrepresented at university. Female students enrolled in a STEM program were significantly more likely to indicate that they feel underrepresented than those in non-STEM programs (33% vs. 14%).

## **5. Conclusions**

Recognition of the persistence of these issues in STEM has led to the proposal of a number of initiatives aimed at reducing discrimination, harassment and perceptions of underrepresentation. We aim to assess the appeal and perceived effectiveness of these initiatives. By reducing feelings of underrepresentation and promoting a culture which deters discrimination and harassment amongst STEM students, these efforts should work to greatly reduce gender bias in these fields.

**6. Contact details:** Danielle Saj, [sajd@myumanitoba.ca](mailto:sajd@myumanitoba.ca)